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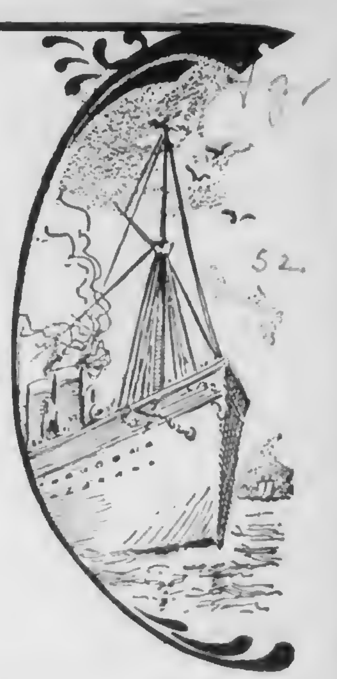


EXPORT IMPLEMENT AGE

A Monthly Magazine Devoted to American Agricultural Machinery, Farm Supplies, Vehicles and Vehicle Materials, Machine Tools, Hardware Specialties, Etc.

TEXTE FRANCAIS
Papier Rose

TEXTO ESPANOL
Papel Amarillo

DEUTSCHER TEXT
Blaues Papier

Vol. XIII. **PHILADELPHIA, PA., U. S. A., OCTOBER, 1905.** **No. 1.**

MORGAN & WRIGHT Fabrikanten von
Gummiwaaren Bester Qualität

Automobil Radreifen, Fahrzeug Radreifen, Hufeisen Polster

Schlauche, Kautschukband Thurmatten, Verpackungs Utensilien, Hebevorrichtungen, geripptes Mattenwerk, Petral-Maschinenbeutel, Knotenmatten, Ringe fur Rahmabsonderer, u. s. w.

Zwanzig Jahre lange Erfahrung in der Fabrikation von Gummiwaaren. Unser Lager besteht aus den allerfeinsten Waaren pa. Qualitat und wird stets garantirt. Jede Anfrage prompt beantwortet.

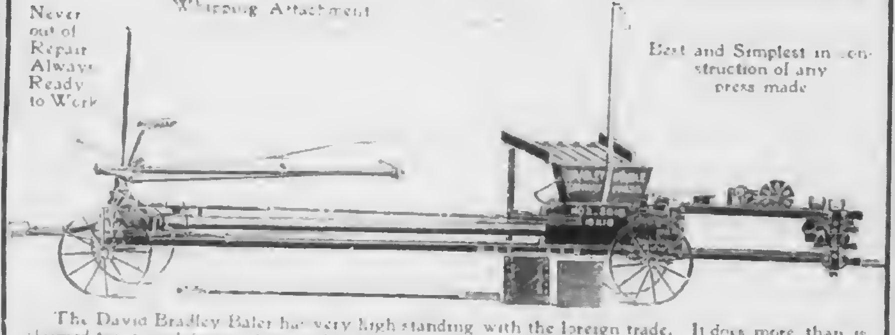
MORGAN & WRIGHT - - Chicago, U. S. A.
214 W. 47th Street, NEW YORK

Hufeisen Polster

Radreifen fur Fahrzeuge Solide und Polster. Fur Haspel jeder gewunschten Lange geliefert.

Klinker Automobilradreifen

DAVID BRADLEY Double Cam. Steel Hay Press **KNOWN THE WORLD OVER**



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Whipping Attachment
Best and Simplest in construction of any press made

The David Bradley Baler has very high standing with the foreign trade. It does more than is claimed for it, and does perfect work under all conditions. Write for literature. We answer correspondence in any language.

La Prensa "David Bradley" de doble excéntrica de acero para embalar Heno es bien conocida en todo el mundo. Jamás se descompone y está siempre lista para el trabajo. Es la mejor y su construcción es más sencilla que la ninguna otra prensa jamás fabricada. Tiene un accesorio para amarrar. La Embaladora "David Bradley" ocupa una alta posición en el comercio extranjero. Hace más de lo que se le atribuye y su trabajo es perfecto bajo todas las condiciones. Escríbasenos pidiendo nuestros impresos. Contestamos la correspondencia en cualquier idioma.

La Presse à Foin à double came de "David Bradley" est connue dans le monde entier. Elle n'est jamais en réparations mais toujours au travail. Elle est la meilleure et la plus simple dans sa construction comparée à toute autre presse manufacturée. Elle est munie d'un [illegible] à [illegible]. La Presse à Foin "David Bradley" a déjà une grande réputation dans le commerce étranger. Elle parfait plus qu'elle ne prétend et accomplit son travail sous toutes circonstances. Adressez nous pour prospectus, circulaires, etc. Nous répondons en toutes les langues.

Made by DAVID BRADLEY MFG. CO., - - BRADLEY, ILL., U. S. A.
Cable address, "YELDARE." Codes used: "A.B.C.," 4th and 5th editions, "A1," "Lieber," and "Our Own."

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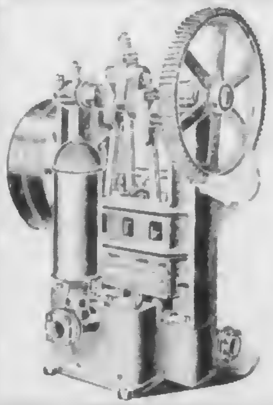
SOUTH BEND, IND., U. S. A.

Plow Makers for Over Forty Years

Send for Catalog



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FOR EVERY SERVICE

Catalogue "A" illustrates and describes 500 different pumps

THE GOULDS MFG. CO.
SENECA FALLS, N. Y., U. S. A.

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Established 1870

CHADBORN & COLDWELL MFG. CO.
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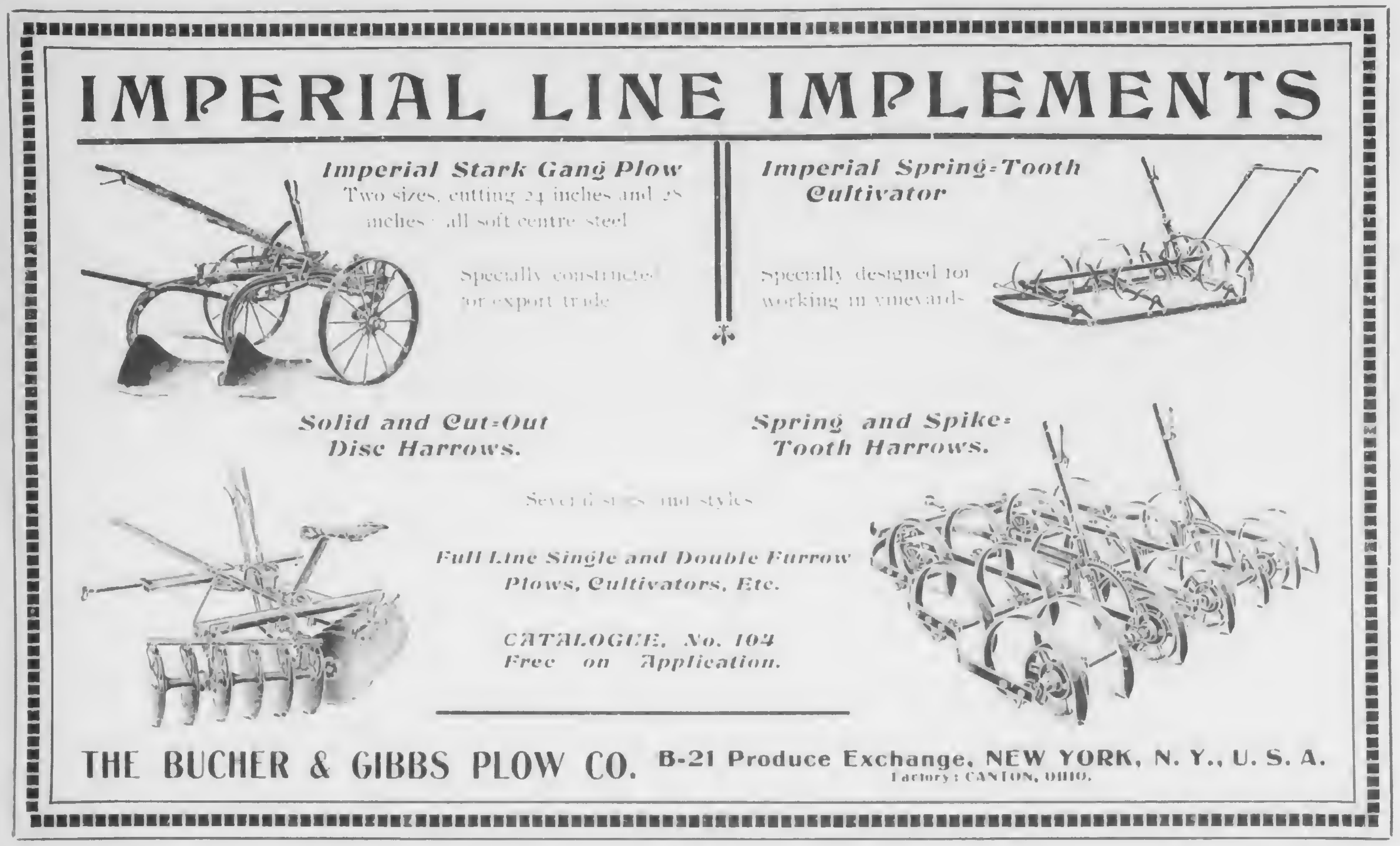


IMPERIAL LINE IMPLEMENTS

Imperial Stark Gang Plow
Two sizes, cutting 24 inches and 28 inches; all soft centre steel

Specially constructed for export trade

Imperial Spring-Tooth Cultivator

Specially designed for working in vineyards

Solid and Cut-Out Disc Harrows.

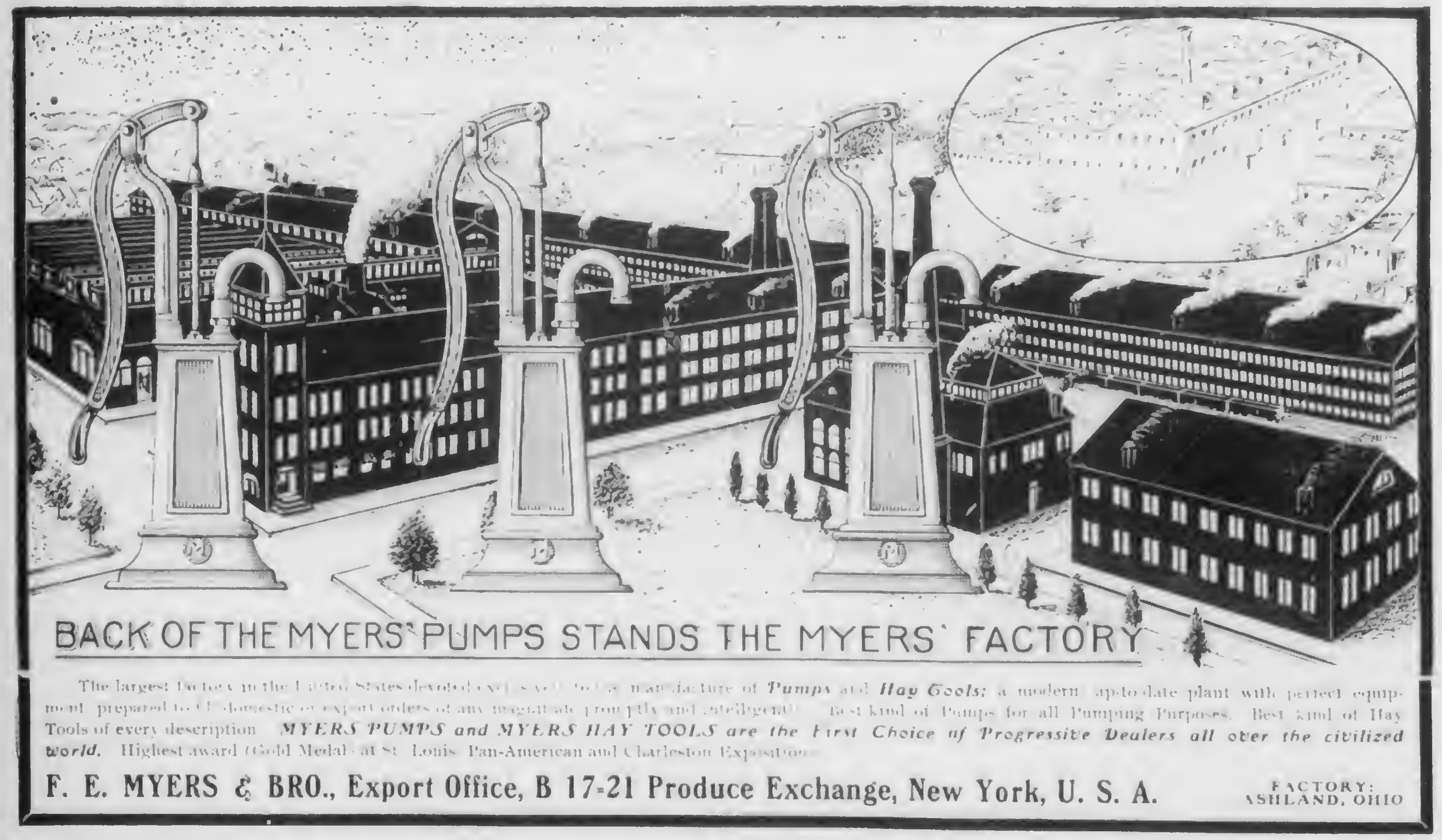
Spring and Spike-Tooth Harrows.

Several sizes and styles

Full Line Single and Double Furrow Plows, Cultivators, Etc.

CATALOGUE, No. 104
Free on Application.

THE BUCHER & GIBBS PLOW CO. B-21 Produce Exchange, NEW YORK, N. Y., U. S. A.
Factory: CANTON, OHIO.



BACK OF THE MYERS' PUMPS STANDS THE MYERS' FACTORY

The largest factory in the United States devoted exclusively to the manufacture of *Pumps* and *Hay Tools*; a modern up-to-date plant with perfect equipment prepared to fill domestic or export orders of any magnitude promptly and intelligently. Best kind of Pumps for all Pumping Purposes. Best kind of Hay Tools of every description. ***MYERS PUMPS and MYERS HAY TOOLS are the First Choice of Progressive Dealers all over the civilized world.*** Highest award (Gold Medal) at St. Louis, Pan-American and Charleston Expositions.

F. E. MYERS & BRO., Export Office, B 17-21 Produce Exchange, New York, U. S. A.

FACTORY:
ASHLAND, OHIO

Directory for Buyers.

The names of firms given below, together with the goods mentioned, are arranged for the convenience of buyers. Their products are given in the English, French, Spanish and German languages. These establishments are among the leading ones in the United States, are strictly reliable, have extensive facilities and are prompt in transacting business. They fully understand the export trade and carefully look after all foreign orders. The EXPORT IMPLEMENT AGE is kept on file in their offices, and any mention of the journal will be an incentive to even greater promptness on their part in obliging you. Inquiries from foreign buyers desiring information relative to American agricultural machinery or implements addressed to them will be given careful and prompt attention. Write in any language you prefer.

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JUL 10 19

Ambulances
Carros de hospital
Krankenwägen (Ambulanzen)
Fulton & Walker Co., Philadelphia, Pa. 29

Baling Presses (Hay, Straw, Etc.)
Presses à foin, paille, etc.
Prensas de Embalar (Heno, Paja, etc.)
Ballen Pressen (für Heu, Stroh, u. s. w.)
Bradley Mfg. Co., David, Bradley, Ill. 1
Collins Plow Co., Quincy, Ill. 29
Dederick Sons, P. K., Albany, N. Y. 36
Ertel Co., George, Quincy, Ill. 6

Beet Implements (Planting, Cultivating and Harvesting)
Betteraves (Instruments pour la culture des)
Instrumentos para el Cultivo de la Remolacha (Sembradoras, Cultivadoras y Cosechadoras)
Rübengeräte (zum Pflanzen, Pflügen und Ernten)
Moline Plow Co., Moline, Ill. 6

Binders, Self (Wheat, Rye, Oats, etc.)
Lieuses Automatiques (Blé, Orge, Avoine, etc.)
Agavilladoras Automáticas (Trigo, centeno avena, etc.)
Selbstbindemaschinen (für Weizen, Roggen, Hafer u. s. w.

Boilers.
Chaudières.
Calderas.
Kessel.
Leffel & Co., James, Springfield, Ohio 29

Bolts and Nuts.
Boulons et écrous.
Pernos y Tuercas.
Bolzen und Muttern (Mutterbolzen)
Columbus Bolt Works, Columbus, Ohio 36

Brakes (Vehicle)
Retrancas (Vehículo)
Frein (de Voiture)
Bremsen (für Fahrzeuge)
Potter Co., The Morgan, Fishkill on Hudson, N. Y. . . . 5

Carriages
Voitures
Carruajes
Kaleschen und Wagen
Dapson & Wolf, Oneida, N. Y. 5
Studebaker Bros. Mfg. Co., South Bend, Ind. 31

Carriage Cloth
Wagentuch
Paño de carruaje
Drap de Voiture
Fairfield Rubber Co., The, Fairfield, Conn. 5

Carriage Materials
Articles pour voitures
Materials for Carriages
Wagenmaterial

Carts (Riding)
Charrettes (à siège)
Carretones (de Montar)
Frachtkarren (Reitkarren)
Dapson & Wolf, Oneida, N. Y. 5
D. F. Sargent & Son, Geneseo, Ill. 31

Cider and Wine Presses
Pressoirs à vin et à cidre
Prensas para Hacer Cidra y Vino
Kelterapparate für Wein und Apfelwein
Lansing Wheelbarrow Co., Lansing, Mich. 31

Clothes Washing Machines
Linge (machines à laver le)
Máquinas de Savar Ropa
Wäsche Waschmaschinen
"1900" Washer Co., Binghamton, N. Y. 35

Coal Cars
Charbon (wagons pour)
Carros para Carbón de Piedra
Kohlenwaggons
Lansing Wheelbarrow Co., Lansing, Mich. 31

Coal Shutes
Charbon (Dalles à)
Canales para Descargar Carbón de Piedra
Kohlen Lade-Rinnen
Lansing Wheelbarrow Co., Lansing, Mich. 31

Corn Crushers
Mais (Concasseurs de)
Trituradoras de Maiz
Mais Zerquetschmaschinen
Sprout, Waldron & Co., Muncy, Pa. 3

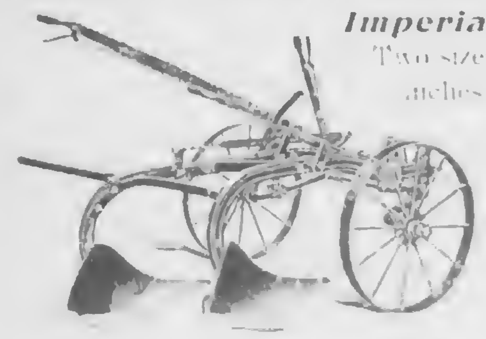
Corn Harvesters
Mais (Moissonneuses de)
Cosechadoras de Maiz
Mais Erntemaschinen
Standard Harrow Co., Utica, N. Y. . . . .

Corn Huskers and Shredders
Mais (Instruments à enlever et à déchirer les bractées du)
Desgranadoras y Picadoras de Maiz
Mais Enthülsemaschinen und Auswerfapparate
Bradley Mfg. Co., David, Bradley, Ill. 1

Corn Planters (Hand)
Mais (Semoirs de, à main)
Sembradoras de Maiz (A Mano)
Maispflanzer (für Handbetrieb)
Ohio Cultivator Co., The, Bellevue, Ohio 38
Wiard Plow Co., Batavia, N. Y. 5

Corn Planters (Horse)
Mais (Semoirs de, à cheval)
Sembradoras de Maiz (para Caballo)
Mais Pflanzmaschinen (für Pferdebetrieb)
Avery Mfg. Co., Peoria, Ill. . . . . [illegible]
Bradley Mfg. Co., David, Bradley, Ill. 1
Moline Plow Co., Moline, Ill. 6

IMPERIAL LINE IMPLEMENTS



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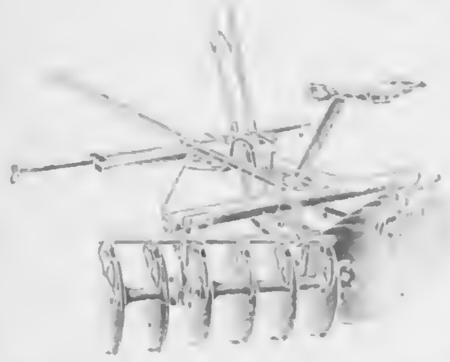
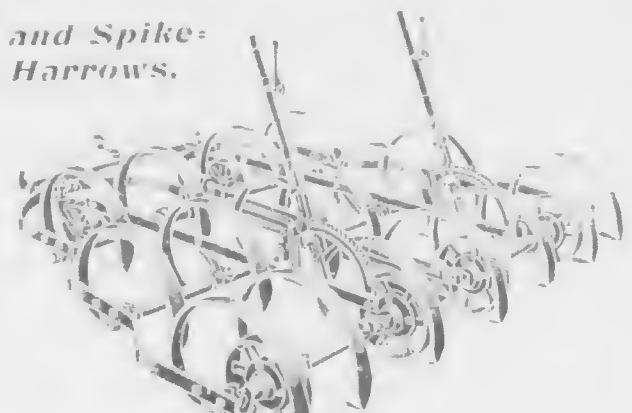
Specially constructed for export trade.

Imperial Spring-Tooth Cultivator
Specially designed for working [illegible]



Solid and Cut-Out Disc Harrows.



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Full Line Single and Double Furrow Plows, Cultivators, Etc.

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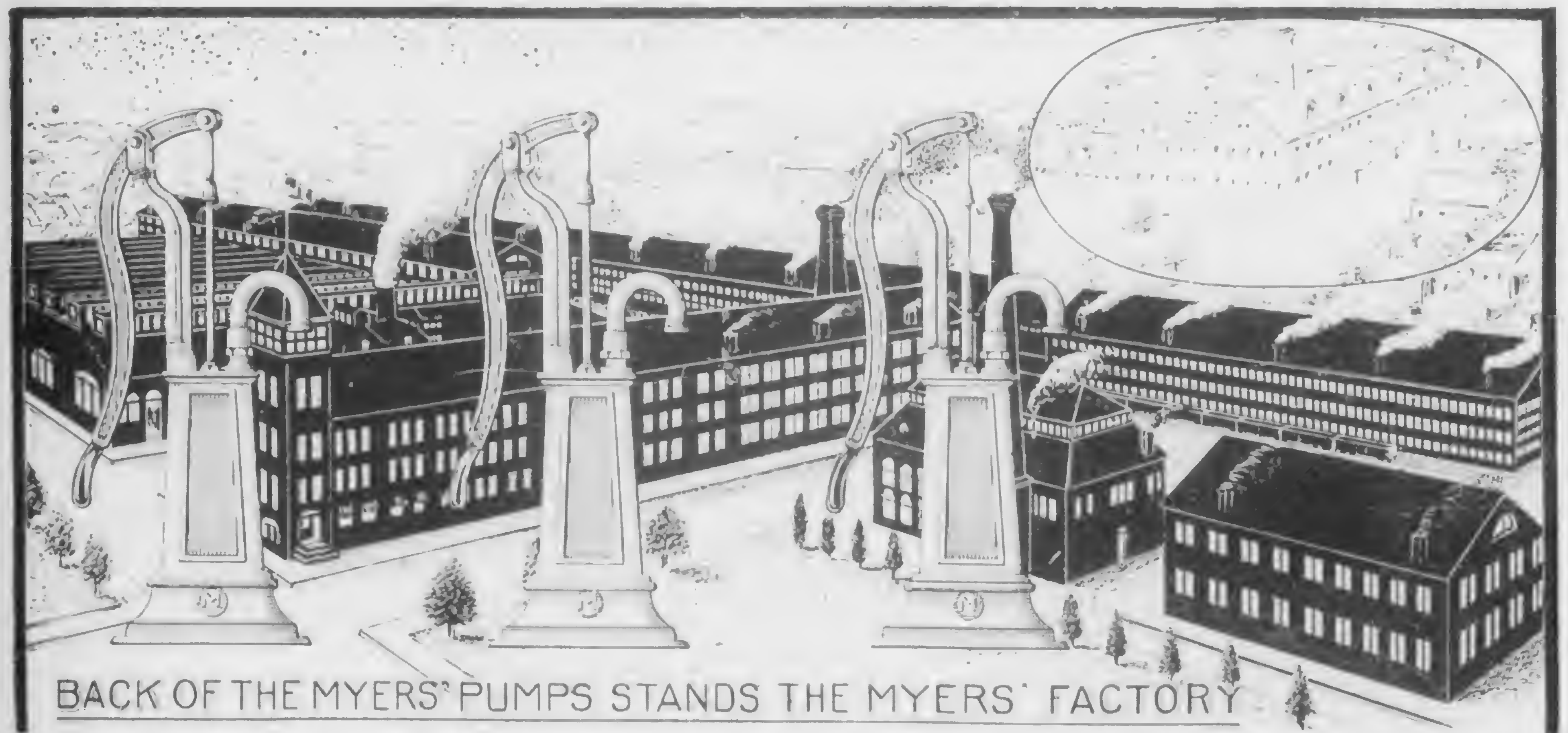
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Avery Mfg. Co., Peoria, Ill. . . . . *
Bradley Mfg. Co., David, Bradley, Ill. 1
Moline Plow Co., Moline, Ill. 6

INTENTIONAL SECOND EXPOSURE

Corn Shellers (Hand)
Mais (Egrenoirs de, à main)
Descascaradoras de Maiz (de Mano)
Mais Pflanzmaschinen (für Handbetrieb)

Marseilles Mfg. Co., Marseilles, Ill.	4
Patch, A. H., Clarksville, Tenn.	5
Sprout, Waldron & Co., Muncy, Pa.	3
Standard Harrow Co., Utica, N. Y.	3
U. S. Wind Engine and Pump Co., Batavia, Ill.	33

Corn Shellers (Power)
Mais (Egrenoirs de), á énergie mecanique
Descascaradoras de Maiz (para Fuerza mecánica)
Mais Pflanzmaschinen für Pferdebetrieb)

Freeman & Sons Mfg. Co., S., Racine, Wis.	3
Marseilles Mfg. Co., Marseilles, Ill.	4
Patch, A. H., Clarksville, Tenn.	5
Sprout, Waldron & Co., Muncy, Pa.	3
Standard Harrow Co., Utica, N. Y.	3

Cotton Planters
Coton (Semoirs de)
Sembradoras de Algodón
Baumwoll Pflanzmaschinen

Ohio Cultivator Co., The, Bellevue, Ohio	33

Cultivating Machinery (Hand and Garden)
Culture du sol (Intruments pour la), á main et pour le jardin
Maquinaria Cultivadora (de Mano y para Huerta)
Garten Pflüge (für Handbetrieb)

Deere Plow Co., John, Moline, Ill.	31
Moline Plow Co., Moline, Ill.	6
Standard Harrow Co., Utica, N. Y.	3

Cultivating Machinery (Horse and Field)
Culture du sol (Instruments pour la), à cheval et pour le champ
Maqninaria Cultivadora (de Caballo y para el Campo)
Bodenkultur Geräte (für Pferdebetrieb)

Avery Mfg. Co., Peoria, Ill.	*
Bradley Mfg. Co., David, Bradley, Ill.	1
Deere Plow Co., John, Moline, Ill.	31
Moline Plow Co., Moline, Ill.	6
Ohio Cultivator Co., The, Bellevue, Ohio	33
Standard Harrow Co., Utica, N. Y.	3

Engines and Boilers (Stationary)
Machines à vapeur et Chaudières (fixes)
Máquinas de Vapor y Calderas (Fijas)
Maschinen und Kessel (Stationär)

Leffel & Co., James, Springfield, Ohio	29

Engines (Traction and Portable)
Machines à vapeur (Pour la traction et transportables)
Máquinas (De Tracción y Portátiles)
Traktions- oder Zugmaschinen und Lokomobilen

Avery Mfg. Co., Peoria, Ill.	*

Feed and Ensilage Cutters
Coupe-aliments, coupe-ensilage
Cortadora de Forraje y Ensilaje
Futter- und Grünfutter (**Ensilage**) **Schneidemaschinen**

Freeman & Sons Mfg. Co., S., Racine, Wis.	3
Marseilles Mfg. Co., Marseilles, Ill.	4
Silver Mfg. Co., Salem Ohio	35

Feed Mills
Moulins pour aliments
Molinos de Frorraje ó Pienso
Futtermühlen

Sprout, Waldron & Co., Muncy, Pa.	3

Files (Letter and Card)
Systèmes de classification (lettres et cartes)
Guarda-Cartas y Tarjetas
Skripturenordner (für Briefe und Karten)

Forgings (Carriage)
Pièces forgées (Voiture)
Forjaduras (para carruajes)
Schmiedereien (Kaleschen-)

Gardening Tools (Hand)
Jardinage (Outils de) à main
Herramientas de Hortelano (de Mano)
Gärtnerei Handwerkzeug

Grain Cleaning Machinery (Rice, Coffee, Grain, Etc.)
Grains (Machines à nettoyer les): riz, café, grain, etc.
Maquinaria pare Limpiar Granos (Arroz, Café, Granos, Etc.)
Getreide Reinigungsmaschinen (für Reis, Kaffee, Korn, u. s. w.)

Sprout, Waldron & Co., Muncy, Pa.	3

Grain Drills
Grains (Semoirs de)
Sembradoras de Granos
Drillmaschinen

Bickford & Huffman Division, Macedon, N. Y.	36
Monitor Drill Co., Minneapolis, Minn.	35
Superior Drill Co., Springfield, Ohio	*

Grain Grinding Mills
Grains (Moulins à moudre les)
Molinos para Granos
Schrotmühlen

Flint & Walling Mfg. Co., Kendallville. Ind.	3
Freeman & Sons Mfg. Co., S., Racine, Wis.	3
Kelly Co., The O. S., Springfield, Ohio	36
Marseilles Mfg. Co., Marseilles, Ill.	4
Sprout, Waldron & Co., Muncy, Pa.	3
U. S. Wind Engine and Pump Co., Batavia, Ill.	33

Hand Carts (Push)
Charrettes à bras
Carretillas de Mano (de Empuje)
Hand-Schiebekarren

Bradley Mfg. Co., David, Bradley, Ill.	1
Deming Co., The, Salem, Ohio	35
Lansing Wheelbarrow Co., Lansing, Mich.	31

Hand Tools (Shovels, Rakes, Hoes, Scythes, Forks, Etc.)
Outils à main (Pelles, râteaux, houes, faux, fourches, etc.)
Herramientas de Mano (Palas, Rastrillos, Azadones, Guadañas. Horquillas, etc.)
Handwerkzeug (Schaufeln, Rechen, Haken, Sensen, Gabeln, u. s. w.

Harrows (Disc, Spring-Tooth and Spike-Tooth)
Herses (à disques, à dents élastiques, à dents droites)
Mielgas ó Rastrillos (de Disco, con Dientes de Resorte y Otros)
Eggen (mit Scheiben-, Federzahn- und Speichenzahn-Vorrichtung)

Bradley Mfg. Co., David, Bradley, Ill.	1
Bucher & Gibbs Plow Co., Canton, Ohio	2
Collins Plow Co., Quincy, Ill.	29
Deere Plow Co., John, Moline, Ill.	31
Moline Plow Co., Moline, Ill.	6
Ohio Cultivator Co., The, Bellevue, Ohio	33
Standard Harrow Co., Utica, N. Y.	3
Wiard Plow Co., Batavia, N. Y.	5

Hay Loaders
Foin (Chargeuses de)
Cargadoras de Heno
Heu Auflader

Marseilles Mfg. Co., Marseilles, Ill.	4

Hay Presses
Foin (Presses à)
Prensas para Heno
Heu Pressen

Bradley Mfg. Co., David, Bradley, Ill.	1
Collins Plow Co., Quincy, Ill.	29
Ertel Co., George, Quincy, Ill.	6
Ohio Cultivator Co., The, Bellevue, Ohio	33
Standard Harrow Co., Utica, N. Y.	3

Hay Rakes
Foin (Râteaux à)
Rastros para Heno
Heu Rechen

Bradley Mfg. Co., David, Bradley, Ill.	1
Moline Plow Co., Moline, Ill.	6
Wiard Plow Co., Batavia, N. Y.	5

Hay Tools (For Handling Hay)
Foin (**Outils** pour la manipulation du)
Herramientas para Heno (para Manipular el Heno)
Heubearbeitungs-Apparate und Werkzeuge

Myers, F. E. & Bro., Ashland, Ohio	2
U. S. Wind Engine and Pump Co., Batavia, Ill.	33

Hods (Steel and Wood)
Auges (Acier et bois)
Artesas de Cargar (de Acero y de Madera)
Tünchkübel (Mörteltröge, aus Stahl und Holz)

Lansing Wheelbarrow Co., Lansing, Mich.	31

Implement Parts (Rake, Teeth, Knife Sections, Etc.)
Pièces de rechange (Dents de râteaux, conteaux de faucheuses, etc.)
Partes de Instrumentos (Dientes de Rastrillo, Secciones de Cuchilla, Etc.)
Theile von Landwirthschaftsgeräthen (Rechenzähne, Messertheile, u. s. w.)

Incubators
Conveuses artificielles
Incubadoras
Brutmaschinen (Inkubatoren)

Ertel Co., George, Quincy, Ill.	6

Lawn Mowers
Tondeuses de gazon
Segadoras ó Cortadoras de Césped
Rasen Mähmaschinen

Clipper Lawn Mower Co., Dixon, Ill	5
Chadborn & Coldwell Mfg. Co., Newburgh, N. Y	1

Leather (Imitation)
Leder (Imitation)
Cuero (Imitación)
Cuir (Imitation)

Fairfield Rubber Co., The, Fairfield, Conn.	5

Machine Tools
Machines-outils
Herramientas Mecánicas
Maschinen-Werkzeug

Silver Mfg. Co., Salem, Ohio	35

Mowers.
Faucheuses.
Segadoras.
Mähmaschinen.

Mills (Corn and Hominy)
Moulins (pour maïs et bouilie)
Molinos (para Moler Maiz Fino y Grueso)
Mühlen (für Getreide und indianisches Reis, Hominy)

Sprout, Waldron & Co., Muncy, Pa.	3
Standard Harrow Co., Utica, N. Y.	3

Oil Cloth
Toile Cirée
Wachstuch

Plows (Walking, Riding and Disc)
Charrues (ordinaires, à siège, à disques)
Arados (de Caminar, de Moutar y de Disco)
Pflüge (Geh-, Fahr- und Scheibenpflüge)

Avery Mfg. Co., Peoria, Ill.	*
Bradley Mfg. Co., David, Bradley, Ill.	1
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Standard Harrow Co., Utica, N. Y.	3
Wiard Plow Co., Batavia, N. Y.	5

Potato Machinery
Pommes de terre (Machines pour la culture des)
Maquinaria para Patatas
Kartoffel-Maschinen

Bradley Mfg. Co., David, Bradley, Ill.	1
Moline Plow Co., Moline, Ill.	6
Standard Harrow Co., Utica, N. Y.	3

Pumps, Hand and Power (Lift, Force and Spray)
Pompes, à main, et à énergie mécanique (Pompes aspirantes, foulantes, pulvérisatrices)
Bompas de Mano y para Fuerza Mecánica (Aspirantes, de Forzar y de Rociar)
Pumpen, Hand- und Kraftpumpen (Hebe-, Druck- und Besprengungs-Pumpen)

Deming Co., The, Salem, Ohio	35
Flint & Walling Mfg. Co., Kendallville, Ind.	3
Myers, F. E. & Bro., Ashland, Ohio	2
U. S. Wind Engine and Pump Co., Batavia, Ill.	33

Reapers.
Moissonneuses.
Cosechadoras
Getreide-Mähmaschinen.

Rollers (Field or Road)
Rouleaux (pour champs et pour routes)
Rodillos (para Campo y para Caminos)
Feld- und Weg-Walzen

Bradley Mfg. Co., David, Bradley, Ill.	1
Lansing Wheelbarrow Co., Lansing, Mich.	31
Ohio Cultivator Co., The, Bellevue, Ohio	33
Standard Harrow Co., Utica, N. Y.	3

Rubber Goods
Articles de caoutchouc
Articulos de Caucho
Gummiwaaren

Rubber Tires
Gummireifen
Bandes de roues en caoutchouc
Llantas de Caucho para Ruedas

Morgan & Wright, Chicago, Ill.	1

Scrapers (Road)
Ratissoires (pour routes)
Dragas (para Caminos)
Strassen Scharr-Maschinen (Strassen-Ebener)

Standard Harrow Co., Utica, N. Y.	3

Seeders, Broadcast (Grain and Grass)
Semoirs pour semer à la volée (Grain et graminées)
Máquinas de Sembrar Semillas al Vuelo (Granos y Semilla de Yerbas)
Breitsämaschinen (für Getreide und Gras)

Freeman & Sons Mfg. Co., S., Racine, Wis.	3

Sharpeners and Grinders
Machines à remoudre et à aiguiser
Afiladoras y Amoladoras
Schärfe- und Schleif-Apparate

Sleighs
Traineaux
Trineos
Schlitten

Dapson & Wolf, Oneida, N. Y.	5

Sprayers and Nozzles
Instruments d'arrosage
Rociadoras y Boquereles
Besprengungs-Spritzen und Uebernasen

Deming Co., The, Salem, Ohio	35
Flint & Walling Mfg. Co., Kendallville, Ind.	3
Myers, F. E. & Bro., Ashland, Ohio	2
Standard Harrow Co., Utica, N. Y.	3

Stalk Cutters
Coupe-chaume
Cortadoras de Tallos
Stengel Abschneider

Street Sprinklers
Arrosage des rues (Tonneaux pour l')
Regadoras de Calle
Strassen Bespreng-Wagen

Studebaker Bros. Mfg. Co., South Bend, Ind.	31

Sugar Cultivating Implements
Sucre (Instruments pour la culture de la canne à)
Instrumentos para el Cultivo Azucarero
Zucker-Anbau Geräthe

Threshing Machinery
Machines à battre
Maquinaria de Trillar
Dresch Maschinen

Avery Mfg. Co., Peoria, Ill.	*

Tire Setters
Machines à fixer les bandes de roues
Máquinas de Poner Llantas
Maschinen zum Aufsetzen von Gummireifen

Standard Tire Setter Co., Keokuk, Iowa	35

Tread Powers (Horse, Dog, Sheep, Etc.)
Machines à utiliser l'énergie de la marche (Cheval, Chien, Mouton, etc.)
Motores de Pisada (para Caballo, Perro, Carnero, etc.)
Kraft-Tretmaschinen (Pferde, Hunde, Schafe, u. s. w.)

Trucks (Hand Warehouse)
Trucs (Emmagasinage à bras)
Carretillas de Mano para almacén
Transport Handwagen (für Waarenhäuser)

Lansing Wheelbarrow Co. Lansing, Mich.	31

Wagons (Business)
Charettes (d'affaires)
Carros (para negocios)
Wagen (Geschäftswagen)

Fulton & Walker Co., Philadelphia, Pa. 29

Wagons and Buck-Wagons
Charrettes et charrettes à lessive
Carretones y Carretas
Wagen und Bockwagen

Ohio Valley Wagon Co., The, Marietta, Ohio . . . . .

Wagons and Carts (Farm)
Wagonnets et charrettes (Ferme)
Carretones y Carretas (para Hacienda)
Landwirthschaftliche Wagen und Karren

Avery Mfg. Co., Peoria, Ill. . . . . *
Lansing Wheelbarrow Co., Lansing, Mich. 31
Studebaker Bros. Mfg. Co., South Bend, Ind. 31

Weeders
Sarcloirs mecaniques
Desyerbadoras
Jäte Maschinen

Standard Harrow Co., Utica, N. Y. 3
Wiard Plow Co., Batavia, N. Y. 5

Well Tools and Drilling Machinery
Outils pour puits et machines à forer
Instrumentos para Abrir Pozos y Maquinaria para Horadar
Brunnen-Werkzeug und Bohr-Maschinen

Flint & Walling Mfg. Co., Kendallville, Ind. 3

Wheelbarrows
Brouettes
Carretillas
Schiebekarren

Lansing Wheelbarrow Co., Lansing, Mich. 31

Wheels (Carriage)
Roues (Voiture)
Ruedas (Carruaje)
Räder (Kaleschen und Wagen)

Wheels and Wheel Materials
Roues et articles pour roues
Ruedas y Materiales para Ruedas
Räder und Rädermaterialien

Windmills (Towers and Tanks)
Moulins à vent (Tours et réservoirs)
Molinos de Viento (Torres y Tanques)
Windmühlen (Thurm- und Bütten)

Flint & Walling Mfg. Co., Kendallville, Ind. 3
Freeman & Sons Mfg. Co., S., Racine, Wis. 3
Marseilles Mfg. Co., Marseilles, Ill. 4
U. S. Wind Engine and Pump Co., Batavia, Ill. 33

Wood Sawing Machinery
Bois (Machines à scierle)
Maquinaria para Aserar Madera
Holzsäge-Maschinen

Marseilles Mfg. Co., Marseilles, Ill. 4
U. S. Wind Engine and Pump Co., Batavia, Ill. 33

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Annonces par ordre Alphabétique.
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Biokford & Huffman Division, American Seeding Machine Co., Macedon, N. Y. 36
Bradley Mfg. Co., David, Bradley, Ill. 1
Bucher & Gibbs Plow Co., Canton, Ohio 2

Chadbourn & Coldwell Mfg. Co., Newburgh, N. Y. 1
Clipper Lawn Mower Co., Dixon, Ill 5
Collins Plow Co., Quincy, Ill. 29
Columbus Bolt Works, Columbus, Ohio 36

Dapeon & Wolf, Oneida, N. Y. 5
Dederick's Sons, P. K., Albany, N. Y. 36
Deere Plow Co., John, Moline, Ill. 31
Deming Co., The, Salem, Ohio 35

Ertel Co., Geo., Quincy, Il. 6

Fairfield Rubber Co., The, Fairfield, Conn. 5
Flint & Walling Mfg. Co., Kendallville, Ind. . . 3
Freeman & Sons Mfg. Co., S., Racine, Wis. . . . 3
Fulton & Walker Co., Philadelphia, Pa. 29

Kelly Co., The O. S., Springfield, Ohio 36

Lansing Wheelbarrow Co., Lansing, Mich. 31
Leffel & Co., James, Springfield, Ohio 29

Marseilles Mfg. Co., Marseilles, Ill. 4
Moline Plow Co., Moline, Ill. 6
Monitor Drill Co., Minneapolis, Minn. 35
Morgan & Wright, Chicago, Ill. 1
Myers & Bro., F. E., Ashland, Ohio 2

"1900" Washer Co., Binghamton, N. Y. 35

Ohio Cultivator Co., The, Bellevue, Ohio 33

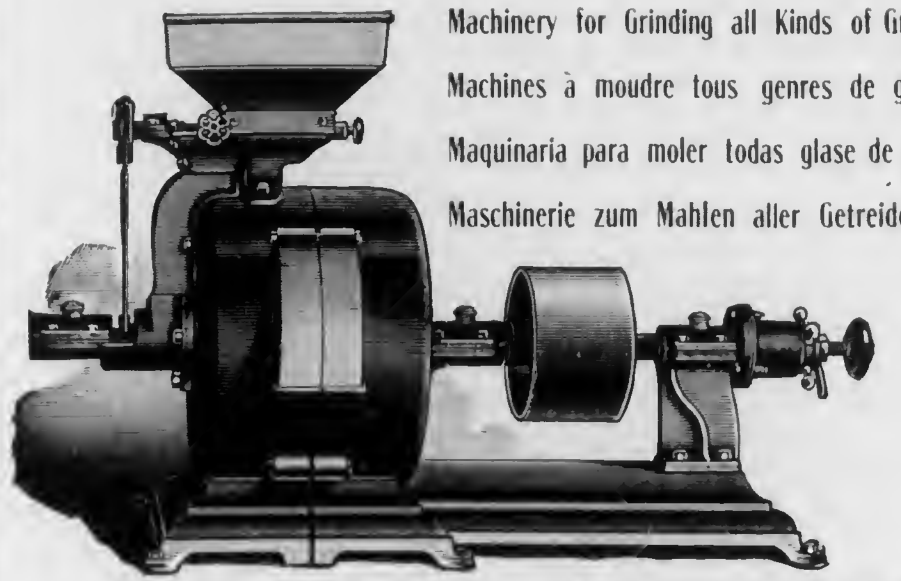
Patch, A. H., Clarksville, Tenn. 5
Potter Co., Morgan, Fishkill-on-Hudson, N. Y. . 5

Sargent & Son, D. F., Geneseo, Ill. 31
Silver Mfg. Co., The, Salem, Ohio 35
Sprout, Waldron & Co., Muncy, Pa. 3
Standard Harrow Co., The, Utica, N. Y. 3
Standard Tire Setter Co,, Keokuk, Iowa 35
Studebaker Bros. Mfg. Co., South Bend, Ind. . . . 31
Superior Drill Co., Springfield, Ohio . . . . . . *

U. S. Wind Engine and Pump Co., Batavia, Ill. . 33

Wiard Plow Co., Batavia, N. Y. 5

Machinery for Grinding all Kinds of Grain
Machines à moudre tous genres de grains
Maquinaria para moler todas glase de granos
Maschinerie zum Mahlen aller Getreidesorten



Write for one of our booklets which gives a full description of French Burr and Attrition, Feed and Meal Mills, Cotton Seed and Linseed Oil Cake Mills, Emery Rock Mills, Cotton, Ear and Ore Crushers, Magnetic Separators, Corn Shellers, etc.

Ecrivez pour un pamphlet contenant description détaillée de moulins à meules de France et à frottement, de moulins pour grains de cotton et de tourteaux de lin, de moulins à pierre d'émeri, de broyeurs d'épis et de minérais, de moulins magnétiques, d'écosseurs, etc.

Escríbasenos pidiendo uno de nuestros libritos, en que se da una completa descripción de nuestros Molinos de Piedra Francesa y de Roce, para Pienso y para Harina, Molinos de Semillas de Algodón, y para moler Tortas de Aceite de Semillas de Linaza, Molinos para Roca de Esmeril, Trituradoras de Algodón, Mazorcas y Minerales, Separedoras Magnéticas, Desgranadoras de Maiz, etc.

Man verlange eines unserer Büchlein, das volle Beschreibung unserer französischen Mahlsteine und Reibevorrichtung enthält, wie auch aller Futter-Vorrichtungen, Mehl-Mühlen, Baumwollensaamen- und Leinölsaamen Kuchen-Mühlen, Schmirgel-Bergmühlen, Baumwollen-, Aehren- und Erzzerstückelungs-Maschinen, magnetische Separatoren, Korn-Enthülsemaschinen, u. s. w.

SPROUT, WALDRON & CO.

Drawer M. **MUNCY, PA., U. S. A.**

The Standard Harrow Co.

UTICA, N. Y., U. S. A.

ABERDEEN, SR. SPRING-TOOTH HARROW

Unequalled Strength
No Clogging
Reversible Points on Teeth

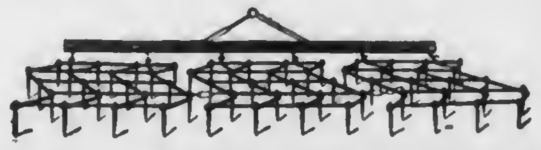
THE STANDARD LINE includes one and two-section Spring-Tooth Harrows and all styles and sizes of Spike-tooth and Disc Harrows, Cultivating Implements, Potato Harvesters, Potato Sprayers, etc., and is one of the most favorably known lines in the leading agricultural countries.

We guarantee prompt service for all export orders. Our factory is only five hours' ride from New York City.

WRITE IN YOUR OWN LANGUAGE FOR CATALOGUE F

ZIG ZAG STEEL SPIKE-TOOTH HARROW

20-Tooth Sections
½-inch Teeth



Advertise your business through the columns of the Export Implement Age; it will pay you. Let us send you rates.

Write us for catalogue No. 34, illustrating and describing the **FREEMAN Windmills, Towers, Feed and Ensilage Cutters, Fodder Shredders, Overhead and Sweep, Horse-Powers, Wood-Sawing Outfits, Corn Shellers, Grinding Mills, Fanning Mills, Broadcast Sowers, etc.**

Ecrivez-nous pour recevoir le catalogue No. 34 décrivant et donnant les vues des machines **FREEMAN:** Moulins à vent, tours, coupe-aliments et coupe-ensilages, machines à couper le fourrage, mécaniques en l'aiv et balayenses à chevaux, outillages pour scierie-mécanique à bois, égrenours à mais, moulins à moudre, moulins d'aérage, semoirs à la volée, etc

Man schreibe uns und verlange Katalog No. 34, welcher die folgenden Freeman'schen Geräthe illustrirt und beschreibt: Windmotoren, Thürme, Futter- und Ensilagen-Schneidemaschinen, Futter Zerschneideapparate, überirdische- und Reinigungs-Pferdekräfte, Ausrüstungsapparate zum Holzsägen, Maisenthülser, Mahlmühlen, Kornschwingen und Schwingapparate, Breitwurfsäemaschinen, u. s. w.

Escribidnos pidiéndonos el Catalogo número Treinta y Cuatro, en que se ilustran con grabados y se describen los Molinos de Viento, Torres, Cortadoras de Pienso y de Ensilaje, Cortadoras de Forraje, Desmenuzadoras, Fuerza Motriz de arriba y de barrida, Habilitaciones para Aserrar Maderas, Descascaradoras de Maiz, Maquinas de Moler, Maquinas de Aventar, Sembradoras al Vuelo, etc., todo de fabricación y marca "Freeman."

S. FREEMAN & SONS MFG. CO., Racine, Wis., U. S. A.

A Windmill that does satisfactory work naturally is the one you want. The "STAR" is the one that pleases. Our booklets in English, German, French and Spanish tell all about

"STAR" WINDMILLS

designed for the heavy and varied work required of them abroad. The "STAR" is built in all sizes, thoroughly galvanized, has ball bearings and is the easiest running Mill made.

"STAR" PUMPING MILL

For many years we have been exporting Windmills and know what is needed to meet all requirements and please our foreign friends. We understand how these goods should be packed for safe delivery, and the packing receives our most careful attention. With all the required parts at hand and properly fitted it facilitates the assembling and erecting of the Mills.

We build **Hand and Windmill Pumps** of various designs, all sizes of **Pine, Cypress** and **Galvanized Steel Tanks, Galvanized Steel Towers** any height **Power Windmills** for grinding feed and running light machinery and **Steel Substructures** all heights, to support Tanks of any capacity.

CORRESPONDENCE INVITED

FLINT & WALLING MFG. CO. KENDALLVILLE Indiana, U. S. A.

New York Office, 96 Wall Street, New York, U. S. A.

Cable Address, "STAR," Kendallville, Ind. Codes, "Lieber," "A B C, 4th edition," "Western Union" and "Private."

Wagons (Business)
Charettes (d'affaires)
Carros (para negocios)
Wägen (Geschäftswägen)

Fulton & Walker Co., Philadelphia, Pa.	29

Wagons and Buck-Wagons
Charrettes et charrettes à lessive
Carretones y Carretas
Wägen und Bockwägen

Ohio Valley Wagon Co., The, Marietta, Ohio	

Wagons and Carts (Farm)
Wagonnets et charrettes (Ferme)
Carretones y Carretas (para Hacienda)
Landwirthschaftliche Wagen und Karren

Avery Mfg. Co., Peoria, Ill.	*
Lansing Wheelbarrow Co., Lansing, Mich.	31
Studebaker Bros. Mfg. Co., South Bend, Ind.	31

Weeders
Sarcloirs mécaniques
Desyerbadoras
Jäte Maschinen

Standard Harrow Co., Utica, N. Y.	3
Wiard Plow Co., Batavia, N. Y.	5

Well Tools and Drilling Machinery
Outils pour puits et machines à forer
Instrumentos para Abrir Pozos y Maquinaria para Horadar
Brunnen-Werkzeug und Bohr-Maschinen

Flint & Walling Mfg. Co., Kendallville, Ind.	3

Wheelbarrows
Brouettes
Carretillas
Schiebekarren

Lansing Wheelbarrow Co., Lansing, Mich.	31

Wheels (Carriage)
Roues (Voiture)
Ruedas (Carruaje)
Räder (Kaleschen und Wagen)

Wheels and Wheel Materials
Roues et articles pour roues
Ruedas y Materiales para Ruedas
Räder und Rädermaterialien

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U. S. Wind Engine and Pump Co., Batavia, Ill.	33

Wood Sawing Machinery
Bois (Machines à scierie)
Maquinaria para Aserar Madera
Holzsäge-Maschinen

Marseilles Mfg. Co., Marseilles, Ill.	4
U. S. Wind Engine and Pump Co., Batavia, Ill.	33

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Collins Plow Co., Quincy, Ill.	29
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Dapson & Wolf, Oneida, N. Y.	5
Dederick's Sons, P. K., Albany, N. Y.	36
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"1900" Washer Co., Binghamton, N. Y.	35
Ohio Cultivator Co., The, Bellevue, Ohio	33
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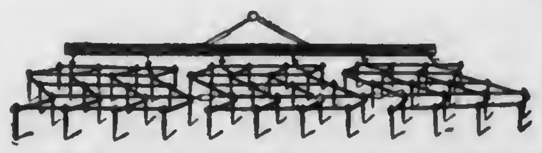

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Man schreibe uns und verlange Katalog No. 34, welcher die folgenden Freeman'schen Geräthe illustrirt und beschreibt: Windmotoren, Thürme, Futter- und Ensilagen-Schneidemaschinen, Futter Zerschneideapparate, überirdische- und Reinigungs-Pferdekräfte, Ausrüstungsapparate zum Holzsägen, Maisenthülser, Mahlmühlen, Kornschwingen und Schwingapparate, Breitwurfsäemaschinen, u. s. w.

Escribidnos pidiéndonos el Catalogo número Treinta y Cuatro, en que se ilustran con grabados y se describen los Molinos de Viento, Torres, Cortadoras de Pienso y de Ensilaje, Cortadoras de Forraje, Desmenuzadoras, Fuerza Motriz de arriba y de barrida, Habilitaciones para Aserrar Maderas, Descascaradoras de Maiz, Maquinas de Moler, Maquinas de Aventar, Sembradoras al Vuelo, etc., todo de fabricación y marca "Freeman."

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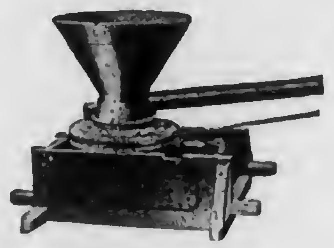

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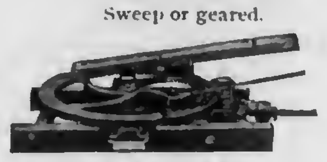

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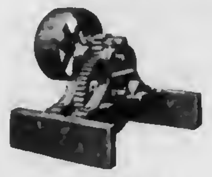

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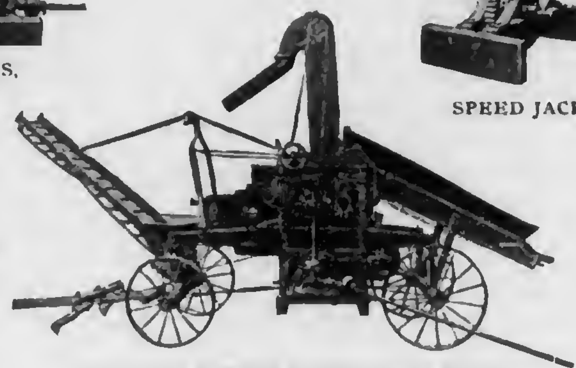

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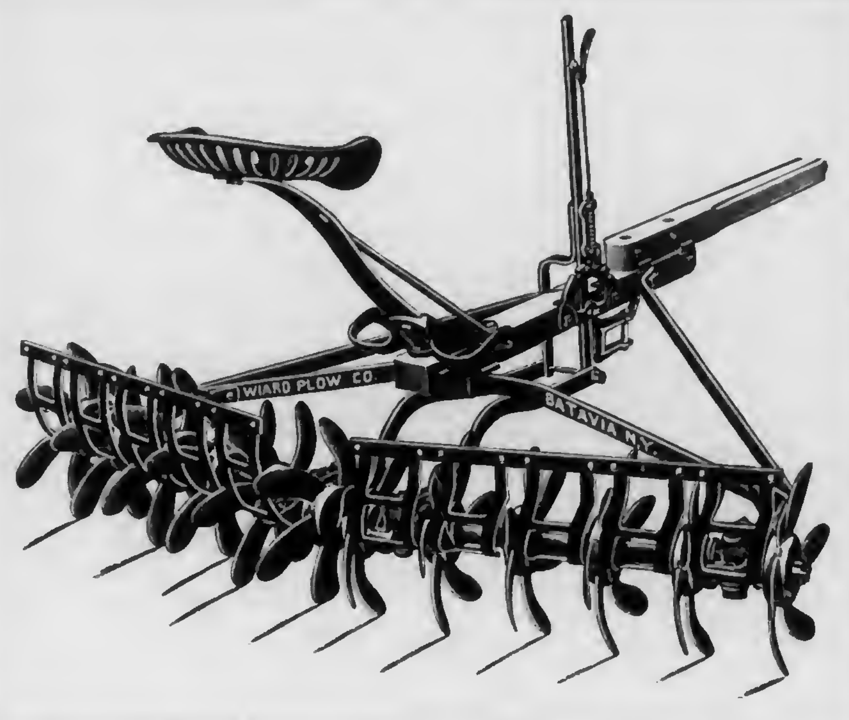

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Not only do we offer our lines as superior to any, but some are special with us.

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Send for quotations through any Export house, or write us direct.

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THE MOWER that will **kill all the Weeds in your Lawns.** If you keep the weeds cut so they do not go to seed, and cut your grass without breaking the small feeders of roots, the grass will become thick and the weeds will disappear.

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Ask Your Dealer for Them

Black Hawk Mill

Wgt 17 Lbs.

GRINDS
Corn, Wheat, Rye, Rice, Coffee, Spices, Etc.

Instantly Adjusted to Grind Fine or Coarse.

WILL DO GOOD WORK AND LAST

Grinding Plates are of the Hardest and Strongest Metals. Can be replaced at slight cost.

Packed in barrels of 12 each. Gross weight, 240 lbs.; net, 204 lbs. Measurement 6⅓ cubic feet.

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Black Hawk Corn Sheller

Wgt. 15 lbs.

SHELLS FAST.
SHELLS CLEAN.
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Beware of Imitations

Capacity 8 to 12 bushels ear corn per hour.

Packed 10 in a barrel. Gross, 180 lbs.; Net, 150 lbs. Measurement 6⅓ cubic feet.

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Forty-six inches from lowest point of arch to the ground. Adjustable in width from 48 to 72 inches. Popular for cultivating Corn, Cane, Tobacco, etc. Packed for export, weighs 830 pounds. Occupies 25 cubic feet of space.

STALK CUTTERS, WALKING AND RIDING PLOWS, DISC PLOWS, DISC HARROWS, PIPE-LEVER HARROWS, CORN PLANTERS AND DRILLS, LISTERS, COTTON PLANTERS, CULTIVATORS—BEET SEEDERS, CULTIVATORS and PULLERS

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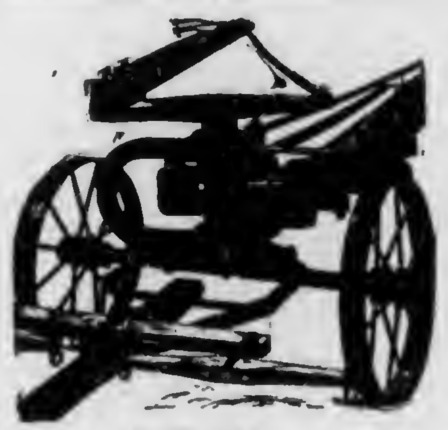

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VUE DE FACE
VISTA DEL FRENTE
VORDERANSICHT

37 YEARS building hay, straw, wool, cotton and corn fodder presses should certainly make us experts, and we claim that our presses are the simplest, easiest draught on the team and the smoothest balers on the market to-day.
Our presses will bale from 10 to 18 tons a day in hay.
Our presses will bale from 10 to 15 tons a day in straw.

Depuis 37 années que nous construisons des presses à foin, à paille, à laine, à coton, à fourrage de maïs, nous avons indubitablement acquis une expérience qui a fait de nous des experts, et nous n'hésitons pas à dire que nos presses sont les plus simples qui soient aujourd'hui sur le marché et celles qui fatiguent le moins l'attelage et fonctionnent le plus aisément.
Nos presses emballottent de 10 à 18 tonnes de foin par jour.
Nos presses emballottent de 10 à 15 tonnes de paille par jour.

Despues de 37 años que construimos prensas para heno, paja, lana, algodón y forraje de maíz tenemos que ser expertos en ese ramo, y por lo tanto reclamamos que nuestras prensas son las más simples y las más livianas para el acarreo por parejas de caballos, y las enfardadadoras mejores que existen hoy en el mercado.
Nuestras prensas enfardan de 10 á 18 toneladas de heno por día.
Nuestras prensas enfardan de 10 á 15 toneladas de paja por día.

37 Jahre ununterbrochener Fabrikation von Heupressen, Strohpressen, Wolle- und Baumwollenpressen, wie auch Maisfutter-Pressen, sollte uns wahrlich in den Stand gesetzt haben, Experten dieser Branche geworden zu sein; wir beanspruchen deshalb für unsere Pressen, dass sie die einfachsten in Konstruktion sind, beim Gespann den leichtesten Zug haben und zum Emballiren die vorzüglichsten Dienste leisten. Unsere Pressen sind im Stande 10 bis 18 "Tonnengehalt" Heu und 10 bis 15 "Tonnengehalt" Stroh täglich zu emballiren.

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Our "Gem" Full Circle

We make a line of both Full Circle and Half Circle Presses.
Prices, f. o. b. cars New York City, on our Gem Full Circle Balers, properly crated for export:

	Net Weight.	Gross Weight.	Space	Prices.
14 x 18 Baler	2,650 (1,457 Kilos)	3,700	115 cubic feet	$215.25 (£44.16.10)
16 x 18 Baler	2,775 (1,526 Kilos)	3,800	171 cubic feet	218.00 (£45. 8. 4)
17 x 22 Baler	2,975 (1,636 Kilos)	4,000	120 cubic feet	221.50 (£46. 3. 0)

Notre presse "Gem" à cercle entier

Nous fabriquons un assortiment de presses à demi-cercle et à cercle entier.
Prix de nos presses "Gem" à cercle entier, mises en wagon à New York et convenablement emballées pour l'exportation:

	Poids net.	Poids brut.	Espace.	Prix.
Presse 14 x 18	2,650 (1,457 kilos)	3,700	115 pieds cubes	$215.25 (£44.16.10)
Presse 16 x 18	2,775 (1,526 kilos)	3,800	171 pieds cubes	218.00 (£45. 8. 4)
Presse 17 x 22	2,975 (1,636 kilos)	4,000	120 pieds cubes	221.50 (£46. 3. 0)

Nuestra Prensa "Gem" Circulo Entero

Nosotros fabricamos un surtido completo de prensas tanto de medio círculo como de círculo entero. Los precios de embarque de la Prensa "Gem" son franco á bordo de los carros hasta New York, y se empaquetan con seguridad para exportarlas.

	Peso Bruto.	Neto.	Espacio.	Precio.
Prensa 14 x 18	2,650 (1,457 Kilos)	3,700	115 piés cúbicos	$215.25 (£44.16.10)
Prensa 16 x 18	2,775 (1,526 Kilos)	3,800	171 piés cúbicos	218.00 (£45. 8. 4)
Prensa 17 x 22	2,975 (1,636 Kilos)	4,000	120 piés cúbicos	221.50 (£46. 3. 0)

Unsere Voll-Zirkel "Gem" Presse.

Wir fabriziren ein Assortiment von Voll- und Halbzirkel-Pressen.
Preise unserer Vollzirkel Emballage-Pressen, frei Board New York, fertig für den Exportversand verpackt:

	Nettogewicht.	Bruttogewicht.	Rauminhalt.	Preise.
14 x 18 Presse	2,650 (1,457 Kilo)	3,700	115 Kubikfuss	$215.25 (£44.16.10)
16 x 18 Presse	2,775 (1,526 Kilo)	3,800	171 Kubikfuss	218.00 (£45. 8. 4)
17 x 22 Presse	2,975 (1,636 Kilo)	4,000	120 Kubikfuss	221.50 (£46. 3. 0)

GEO. ERTEL CO. - 592 Kentucky Street, Quincy, Ill., U. S. A.

EXPORT IMPLEMENT AGE

Vol. XIII. Philadelphia, Pa., U. S. A., October, 1905. No. 1.

AMERICAN IMPLEMENT MANUFACTURERS CONSIDER QUESTIONS OF EXPORT TRADE

[Report of the Foreign Commerce Committee to the National Association of Implement and Vehicle Manufacturers at the recent convention at Niagara Falls, N. Y., U. S. A.

Mr. Chairman and Gentlemen of the Convention:

It is a self-evident proposition that to hold and increase our foreign trade, it is necessary to create a greater expansion of our industries through more direct communication and improved trade relations with the various foreign countries. This imperative need of expansion for the marketing of what we produce appeals to your committee to the extent of recommending the adoption of every telling policy that will enable us to reach the markets of the world.

We must adopt the broadest possible methods and equalize conditions in some way by subsidies or otherwise, so as to place us on a basis that will enable us to compete with other nations, and as far as possible transport our wares at the lowest ruling shipping rates and conditions.

Your chairman has always contended that if we can continue to keep our artisans employed during a nine or ten-hour day and get results as at present and as we have been doing in the past, we can compete with any country in the world substantially without protection. There are no longer any "infant industries" needing a high protective tariff. Our observation is that while labor is cheaper in foreign countries it is not for the work done.

The United States stands not only at the head of the great manufacturing nations of the world, but her manufactures equal those of the United Kingdom, France and Germany combined.

Our Association produces a large part of the world's requirement in implements and vehicles. The civilized nations of the world want the product of our factories because of its acknowledged superiority in construction.

The manufacturer who has the ability to invent, build mammoth establishments and install the complex machinery of the present day should, in the judgment of your committee, have the capacity to market his product in competition with the markets of the world, and be interested in securing the adoption of any and every feasible method that will secure this result.

Your committee, however, is more or less embarrassed to offer anything new or original in the light of the magnitude of the problem, and the very able and exhaustive reports made by previous committees, but desires to call attention to a few subjects that it is believed will be of value to the members of the Association.

* * * * * * *

Consular Services of the United States

You will recall that the chairman of this committee, as president of the Association, called attention to the necessity of improving the consular service of the United States, that thereby our foreign trade might be increased. Our representatives in the consular service are recognized by foreign nations as our "business agents," and as such should be the most capable men that can be secured. These places should not be made the foot-ball of politicians and given as rewards for partisan services.

Much has been done of late years to raise the standard of efficiency, but that there is still room for improvement will not be questioned. No permanent improvement can be possible until the present "hit or miss" system of appointments now in vogue gives way to one that will make possible not only the securing of capable men originally, but will also provide for promotion and transfer according to merit, and the retention in office despite changes in administration.

MR. F. E. MYERS.

Chairman of the Committee on Foreign Commerce of the National Association of Agricultural Implement and Vehicle Manufacturers.

The agricultural interests of the United States have long been dependent for their prosperity upon the demand abroad for their surplus products. Owing to the superior skill of our artisans and the constant development and introduction of improved labor-saving machinery, our manufacturing industries have found that they were outstripping our own home market, notwithstanding our enormous consumption.

Relief from an accumulation of stocks and a continuance of our present prosperity as manufacturers can only be secured by an increased foreign demand. The statistics compiled by the Department of Commerce and Labor show that our exports in the fiscal year just ended reached the enormous total of $543,020,297, as compared with $452,415,921 in the preceding year.

The United States has become within recent years the greatest manufacturing nation in the world. In 1860 the United States stood at the bottom of the list of the four great manufacturing nations, viz.: the United Kingdom, France, Germany and the United States. Forty-five years later the United States stands at the head of the list and her manufactures equal those of the other three nations combined.

It is estimated that the total value of the manufactures entering the world's markets, determining this by the grand total of manufactures exported, country by country the world over, is $4,000,000,000, so that notwithstanding our proud position as the leading manufacturing nation, we supply at present only a small proportion of the manufactures entering the markets of the world.

To retain and increase our export trade we must look to those countries that have no well-developed manufacturing industries. It is in Asia, Africa, South and Central America, Mexico and Australia we must look to secure a market for our surplus manufactures.

These countries at present are mainly supplied by the United Kingdom, Germany and France. The people of Mexico and South America are our neighbors, and we should naturally supply the bulk of their requirements. At present, South America, Mexico and the other Latin-American countries draw the bulk of their imports from Europe. The statistics show that South America imported from European countries a total of $240,000,000 last year, while at the same time our exports only amounted to about $50,000,000.

A notable step for the betterment of our consular service was made when President Roosevelt, inspired by the genius of the late John Hay, in a special message to Congress recommended the appointment of six special agents of the State Department, with the diplomatic rank and title of "commercial attache," to be appointed preferably from the consular service and to be assigned, subject to transfer at the discretion of the Secretary of State, to be sent abroad to make a study of the conditions in foreign countries and report to the Department of State conditions existing in foreign countries, to prepare for the Department of Commerce and Labor reports upon commerce and manufactures or kindred topics, to visit the consulates and examine their workings, suggest changes to the Department of State as would tend to the general improvement and strengthen the service.

These agents are to cover a wide scope of territory. One is to be sent to Austria and the Balkan States, Germany, Switzerland, Russia and other countries of northern Europe; one for France, Italy, Portugal, Spain and the other countries bordering on the Mediterranean; the third for Great Britain and her dependencies; the fourth for Mexico, Central America, the West Indies and South America; the fifth for Asia, more particularly Asiatic-Russia, China and Japan, and the sixth to be held in reserve for special service and particular missions to any part of the world.

While this may seem spreading the butter rather thin, it is without doubt a step in the right direction and may prove to be the "leaven" that will leaven the whole lump. It is only an experiment, but the results will soon be apparent, and like the manufacturer who finds his trade growing, this force of experimental travelers can be increased.

As evidence of the attention paid to the securing of specially trained representatives in the consular service of foreign nations, it may not be inopportune to refer here to the qualifications necessary to secure an appointment in Great Britain.

It is an absolute requirement that English be understood perfectly. The candidate must also understand French, and at least one other language, Spanish or German, and be able to speak them fluently. He must also possess a thorough knowledge of British and commercial law relating to shipping, negotiable instruments, bills of exchange, promissory notes, contracts for the carriage of goods, marine insurance, etc.

"A HINDOO MAN."
On the Island of Jamaica, West Indies, live many natives of the East Indies, who perform the labor of soil cultivation.

THE MARINER'S BEACON.
Light house at entrance to Port Antonio, Jamaica, (W. I.) harbor.

[Photos by the Circulation Manager of the Export Implement Age]

Germany also has a similar course of training for her representatives in the service. The German consul speaks the language of the country to which he is accredited like a native, and in addition French and English.

This thorough course of training undoubtedly accounts for the large foreign trade of those two countries and for the goods marked "Made in England" or "Made in Germany" on the wharves of countries all over the civilized world.

It is proper in this connection to say that there has been a great improvement in the value of the reports made to the Department of State and as now issued by the Department of Commerce and Labor. As now prepared they form a source of information that has great value to the manufacturer seeking a foreign market, and who has the proper organization to follow up the suggestions made.

'In this connection your committee noted an article recently in an international paper that is so pertinent that we quote it here. It was entitled, "Are the United States Consuls Impractical?" It said:

"Persons who follow the American consular reports carefully cannot fail to be impressed by the frequent appeals of the consuls to American manufacturers to send their salesmen abroad, extend their terms of payment, issue printed matter in foreign languages, adapt their wares to the foreign demands, and exercise greater care in the matter of packing, etc. Scarcely a consular report reaches Washington that does not contain one or more of these appeals from one or more consuls.

"The question arises as to why these suggestions have to be made so often and always so emphatically. Why do not the American manufacturers learn more quickly? Are the consuls impractical theorists, constantly proposing impossibilities, perhaps under stress of patriotic enthusiasm, or are American exporters stupid or indifferent?"

This criticism would seem to indicate that as manufacturers we are not getting the full benefits of the suggestions made by our present representatives in the consular service.

Consul H. W. Harris, Mannheim, Germany, calls attention to defects in certain trade publications that are sent to consuls. He says:

"Among the publications received at consulates are numerous more or less complete lists of American manufacturers and traders. Though not printed solely for consulates or foreign buyers, stress is usually placed by the publishers on the value of the publications for reference in a consulate and as aids in bringing the trader and his foreign customer together. While such books are of much value, their usefulness is apt to be lessened by either one or both of two chief defects, namely, the omission of the names of many excellent concerns, and the insertion of those less worthy, and the omitting of anything to indicate whether the concerns named are engaged in foreign trade.

"The first defect naturally arises from the fact that the publications are usually, if not always, prepared as a private enterprise, and the names of those firms only appear which desire to advertise in the book. The other defect could in most cases be corrected by giving the addresses of foreign agents or otherwise.

"Manufacturers and traders naturally fall into two classes, those who trade abroad and those who do not. The foreign buyer is not seeking the firm which is indifferent whether it sells abroad or not and which will fill an order only for cash and without further responsibility after the merchandise is placed on the cars. He is seeking the firm which is seeking him and is willing to go half way in the matter of trade."

Reciprocity and the Reciprocity Convention.

As the Executive Committee of this Association appointed delegates to the convention recently held in Chicago, and as the president of the Association will, without doubt, discuss the work of the convention, it will be referred to here only in so far as it bears upon the work of this committee.

Germany

Advices have been received from Germany since the above convention by which it is thought the German Government will not enforce their new tariff to go into effect March 1st next, but will wait until the close of the next session of our Congress to give it time to adopt the recommendations of the convention.

Australia

The Australian Parliament is now in session, and information just received is to the effect that a bill is being prepared and will soon be presented by which the United States will have the benefits of their minimum tariff, in exchange for the same concession by our Government.

Russia

During the past year Russia has put into effect a law which permits foreign corporations to do business in the empire on the same basis and subject to the same laws of registration and taxation as those incorporated in Russia. This gives American firms who do business in Russia a standing in their courts and legalizes contracts.

Late newspaper advices are to the effect that at a conference between President Roosevelt and M. Witte, the Russian peace envoy, the latter presented to the President the following communication:

"Some years ago, in consequence of a misunderstanding in the interpretation of the most favored nation clause, there were established on several articles of American production customs duties on a higher scale than those levied on the same articles when imported from other countries.

"His Majesty, the Emperor of Russia, has commanded me to inform the President of the United States that he has been pleased to order the discontinuance of the levying of such higher duties on American products in order that henceforth the American manufacturers should pay the same duties as importers from other countries."

The customs duties referred to above, which by the direction of the Emperor have been discontinued, grew out of the imposition by the United States in 1901 of a differential duty on Russian sugar imported into this country.

In retaliation the Russian Minister of Finance issued an order, which became effective March 9, 1901, imposing maximum duties on certain American articles, the increase ranging from 20 to 30 per cent.

These increases affected cast iron wares, manufactures of iron and steel, iron and steel boilers, tanks, bridges, pipes, etc., machinery, sewing machines, meters, dynamos, portable engines, locomotives, cars, locomobiles, fire engines and pumps.

As a treaty of peace has now been signed by the envoys of Russia and Japan, it is hoped with these concessions our trade with Russia will rapidly increase.

France

Our trade with France suffered a heavy loss by reason of the failure to ratify the so-called Kasson treaty. Recent advices from reliable sources tend to show that trade on goods heretofore supplied by American makers is now being diverted to other countries or made in France. To illustrate, we quote from a letter of recent date:

"There are now in France several factories making goods similar to yours, and against which we have to compete. The custom tax we have to pay on your goods is 20 francs per 100 kilos (220 pounds). When you first came to Paris we were selling a German make of goods similar to yours, which were quite satisfactory, and which we could get within one week, as against two months from America, and on which we paid only 16 francs per 100 kilos for custom tax, against 20 francs for yours."

This difference figured into cents means 45 cents per 100 pounds on net weight. We are advised that spring tooth harrows, cultivators, hay rakes, tedders and many other articles which were formerly shipped to France in large lots, are now nearly all made there, or are imported from Canada, which country enjoys the benefits of the French minimum tariff.

Not only does France impose her maximum tariff on American goods, but compels us to ship by steamers carrying the French flag, at a high rate of freight, or if shipped under other flags, imposes a differential duty of about 10 per cent. in addition to the regular maximum tariff.

It will thus be seen that it will require aggressive work to regain this trade even with reciprocal trade relations.

German Patent Laws, Etc.

The industrial advancement of Germany has been such within the last few years, and more especially the last year, that German manufacturers are producing implements of good quality at such prices as make it quite impossible for American makers to compete, and in many cases they do not hesitate to copy our designs.

The German patent laws and the indifference of American manufacturers about protecting their goods in Germany are largely responsible for this condition.

This committee would be remiss in its duty if it failed to urge upon all the importance of protecting their patents in Germany, England, Russia and France, which compete with us in our lines of manufactures.

The Philippine Islands

These islands now offer a new field to the American manufacturer, and one well worthy of consideration by the members of this Association. The laws of the Philippine Government, through the influence of American control, will be found very favorable to American goods, and it is the opinion of your committee that the future trade with the islands will prove very satisfactory, if properly developed.

Cuba

Under the very favorable present trade relations with Cuba a very large trade has been secured. The future of the island is very bright. The past year has been one of great prosperity. Crops have been large and prices good. The influx of American money and American settlers has already effected great changes, but care must be used in developing the trade and extending credits.

It is worthy of mention in this connection that the Cuban Government has lately recommended an extension of the present reciprocity relations with the United States, which have proven so effective in increasing our commerce with the island.

Great Britain has been endeavoring for some time to negotiate a treaty with Cuba. Late advices from Havana state that the Cuban Senate has declared emphatically against ratification. The principal reason given is that Cuba's commercial interests are too inseparably bound to her great customer, the United States, to permit granting for ten years such privileges to British warships and citizens as those named in the treaty.

Another reason given is that the adoption of the treaty would allow privileges to British warships as well as merchant men not warranted by the relations between Cuba and Great Britain, and not permissible in view of the relations between Cuba and the United States.

The latter reason is considered the most potent on account of the suspicion that the treaty, while ostensibly one of commerce, navigation and amity, would in reality give to British warships greater privileges in Cuban ports than those given the United States by the cession of two naval stations.

Adapting Goods to Foreign Requirements

In dealing with this subject we must understand and consider national customs, and character of animal or power they have with which to operate implements. When this point is reached, prepare a careful description of every detail, in the language of the buyer, sending clear illustrations.

Do not copy old and antiquated implements or goods simply to be able to supply what they have already been buying. Dealers in all parts of the world look to the American manufacturer for something better than they have formerly had to accomplish the work. What you want to know is what the implement is intended to accomplish, and be absolutely sure that it will do it.

Quoting Prices to Unknown Parties

The indiscriminate quoting of prices to every foreign inquirer has caused some of the large importing firms to refuse to take up certain makes of goods on the ground that to meet competition would not leave any profit. Foreign houses look upon such methods as resembling those of catalogue houses.

Do not quote prices to unknown parties. Write asking for further information as to wants, and in the meantime take steps to find out who the parties are and their standing.

Substitution of Goods

Former committees have touched upon this. We cannot, however, refrain from calling attention to the dissatisfaction which results from a course of this kind.

Keep your customers fully advised by up-to-date literature of all changes and improvements you make, and rather than substitute, cable, if necessary, whether the goods can be used with the changes or not.

Substituting on orders has been done so frequently that foreign buyers have made protests to our consuls, and many losses have been made by shippers, as parties would not receive the goods, and this has done much to create a feeling of distrust between the American manufacturer and foreign buyers.

Packing Goods

This is an important matter. Your chairman has foreign buyers. So far as possible, pack all parts to make a complete implement in one or more packages. Take extreme care against errors in packing or breakages in transportation, and that all goods sent abroad are of good quality, carefully made and shipped on time, and under no circumstances undertake to unload antiquated or poorly made goods or those of unproven adaptation.

We cannot help but feel that manufacturers will comprehend without further comment by this committee the injustice and consequent damage that will be incurred by carelessness as to quality of goods, inadaptation, correction of weak points, and the packing of goods in an irregular manner or different from the requirements.

Emblem

To inspire confidence on the part of foreign buyers, an emblem to show that you are a member in good standing of the National Association of Implement and Vehicle Manufacturers, with a further statement that you refer to said Association, giving address, would, in the judgment of the committee, inspire confidence and be decidedly effectual.

Bureau of Information

We are inclined to recommend the establishment of a bureau of information, subject to such regulations as the Executive Committee may prescribe.

THE APPLICATION OF POWER TO FARM WORK

An Address by PROF. ELWOOD MEAD, Chief of Irrigation and Drainage Investigation, Washington, D. C., delivered before the National Association of Agricultural Implement and Vehicle Manufacturers.

PROF. ELWOOD MEAD

Although agriculture is the oldest of human industries, its greatest improvement has been made in the last hundred years. Up to the beginning of the nineteenth century men plowed as they did in the time of Pharaoh and thrashed as they did in the days of Abraham. Progress in agriculture dates from the time when machinery began to be substituted fot hand labor, from the time when it relieved the farm of the hardest tasks and gave greater rewards for the hours of toil. We can hardly realize the changes wrought by the long list of agricultural machines and implements which American ingenuity has brought forth, nor what this continent would be like if we still cut grain with a sickle and thrashed it with a flail.

Machinery enables us to grow the leading farm products with one-fifth the labor required fifty years ago. In that time the wages of farm laborers have more than doubled, yet the cost of producing crops has been lowered one-half and the quality greatly improved. Striking as are these statistics, they give no adequate conception of what agricultural machinery has done for the development of this nation, because its material benefits have been more than equalled by the social and intellectual gain which has come by relieving farmers from deadening toil. In a republic the quality of the man is of as much importance as what he earns, and while we cannot measure by percentage what machinery has done for the intellectual development of the farmer we know that swinging a hoe does not stimulate thought like operating the lever of a steam thrasher.

We need not undervalue the great achievements of the pioneer farmers to realize how much greater are the requirements of to-day. The courage, intelligence and skill with which our forefathers used their primitive tools, and the success they won, are a proud heritage. But their tools and their methods will not answer now. In the rapid series of changes wrought by the progress of invention the old tools have disappeared almost as completely as the Indian and buffalo. Gone also are the skill and dexterity with which the scythe, the hoe and the ax were used. The trouble we now labor under is that the evolution of farm machinery has gone on so rapidly that it has outstripped the farm laborer's growth in mechanical skill. He has forgotten the old methods and not fully mastered the new.

The American farmer is not only the largest user of farm machinery in the world; he is also the most wasteful. The average life in America of a self-binder is less than half what it is in Germany. The American farmer uses power machines because he cannot afford hand labor. It is too scarce and costly, and he is now facing certain tendencies which make his success more dependent on the economies of power than ever before. Other factors which enter into the cost of producing crops all tend to an increase. There is no more cheap fertile public land. The price of land is rising, so is the outlay for maintaining its fertility. Farm labor was never so scarce nor wages so high as now. The American farmer has to compete with the foreign farmer in prices he gets for his produce, and with the American railroad, mine, and factory in the prices he pays his help. The home cempetition in labor is becoming more direct and severe each year.

The building of suburban steam and trolley lines, the extension of telephones into farming districts, and free rural delivery, are bringing the city and country into a constantly closer union. Farm and city laborers meet and compare notes, and the city laborers meet and compare notes, and the farmer's son or the farm worker no longer hesitates to try his fortune in the factory if wages or conditions of labor seem more attractive. With the increasing wages and shortened hours of labor in the factory he is insisting more and more that farm work shall have the same privileges. In any event the influence of organized labor and the rising wages of the cities is felt to-day in every agricultural community. Men no longer work from sunup to sundown, and where labor is scarce, as in California, the hours are as rigorously restricted as in any city factory. If American agriculture is to maintain itself in the markets of the world, it must do this through a continued improvement in machinery which will make the individual man more and more effifficient.

It is not possible to say how this will be done with respect to any particular machine, for the work of the inventor is always an advance into the unknown, but we may with profit consider some of the general influences which should be utilized to secure improvement in design and more efficient use of machinery. The first thing is better training for the American farmer in mechanical principles. American farm machinery is not rendering the service it should, because it is not selected with wisdom and not operated and cared for with skill. We buy a plow which needs a team of 1,700-pound horses to pull it, and then hitch it behind a team of 1,200-pound horses. The result is neither plow nor team is a success. We leave our wagons, our mowers and our self-binders exposed to rain and sun, thus lessening both their life and their service, and we do this without shame or reproach. We need in this country a public sentiment which will put the farmer who neglects or misuses machinery on the same plane with the farmer who has poor breeds of stock or who neglects to care for them. We need investigations which will enable farmers and manufacturers to adapt machinery more perfectly to the power that is to run it and the strength that is to control it. How much does the average farmer to-day know or think about the power required to pull any machine or the importance of having the size of machines adjusted to the size or number of horses which he keeps? And how much energy in this country is wasted by teams who walk too far for the work they do, or who are worn out by being harnessed to a load too heavy for them to pull? Investigations carried on last year by the Iowa State College to determine the relation between the weight of horses and the draft of breaking plows show how valuable to both the farmer and the maker of machinery a better understanding of these matters would be. When we have studied the relation of the power needed to operate machinery to the size and weight of the horses which supply this power, as we have studied the chemistry of feeding animals or the relation of fertilizers to the needs of soils, the factory will make better tools and the farmer will make more money out of their ase. There has, however, been so little systematized study of the principles involved in the operation of farm machinery, and so little attention given to instruction in farm mechanics in our agricultural colleges and technical schools, that manufacturers have had difficulty in securing properly trained men, that is, men who combine mechanical training with a knowledge of agricultural science and practical familiarity with farm life.

I have thus far spoken solely of the use of animal power as a substitute for hand labor. We are, however, in the beginning of another evolution whose possibilities we are unable to forecast. This is the employment of steam, wind, gas and electricity as sources of power in farm work. How far these are to take the place of both men and animals we cannot predict, but every year sees their uses widening. Wind, which was at first used almost solely for pumping water for live stock, is being used to cut feed, saw wood, run the machinery of dairies, and it seems possible that with improvements in electrical storage it may in time light the farmer's house, furnish the heat to cook his dinner and iron his clothes. The potential power of the streams which rise on our mountain summits and flow down to the sea is enormous. Much of this is unutilized because heretofore the factory had to go to the stream, and this was not possible, but with the improvements in electrical transmission the stream now goes to the farm and the factory. The water falls of the Sierras now generate electricity which pumps water for the irrigation of farms in the Santa Clara Valley, 240 miles away. Steam and gas engines plow and pulverize the soil, plant the seed, pump water for the irrigation of the crop, run the cultivator, the harvester and the thrasher. Some farms now have more power and more complicated machinery than many extensive factories. On one ranch in California the farm machinery operated by gas or steam cost over $60,000, and the farm equipment of this character is being constantly increased. This kind of power seems to be displacing the horse, just as the locomotive has supplanted the stage coach. The automobile can go faster and longer than the trotter. The steam plow in some places does better work than the horse and does it cheaper. This year a gasoline engine attached to a harvester on the water-logged lands of the Northwest was able to run in fields where horses mired. Throughout the southern part of the United States there is a great field for the steam and gas motor. They can operate in the summer's heat, amid mosquitoes and flies, without discomfort and loss of efficiency which attends the use of the horse and mule.

To me the most interesting feature of the Lewis and Clarke Exposition, and one which was most significant of our advanced civilization in this country, was the splendid display of farm machinery in the agricultural building. No one could look at this without having pride in the men who require and use such tools. I

filled page after page of my note book with a list of these evidences of American inventive skill. It includes dairy machinery which makes better butter than can be made by hand; a 30 horse-power steam plow which will turn over the soil of a good-sized farm in a single day; a 40 horse-power traction engine which hauls its load over the country roads at five miles an hour, and requires as much mechanical skill to run it as a locomotive.

The full benefits of farm machinery are not realized, because the average farmer has not the mechanical training or the requsite skill to get the best results out of these complex tools. This has been brought home to us in our studies of pumping machinery used in lifting water for irrigation. Two years ago I gathered the results of 18 gasoline pumps installed in a valley in the Southwest. Thirteen of these had been abandoned, not because irrigation by pumping did not pay, but because the men who bought this machinery were not equal to keeping it in order. They had never before tried to run anything more complicated than a mule, and the change to a gas engine was too violent.

This year our investigations have included a large number of field tests of pumping machinery in Louisiana and California. Millions of dollars have been invested in this kind of machinery. Measured by value, nearly one-tenth of the irrigated products in this country are now grown with water lifted by pumps. In the rice districts of Louisiana one-fourth of the outlay in growing a crop is for pumping. Manifestly the efficiency of this machinery has much to do with the profits of farming. In the field tests made this year the highest efficiency was 16 times the lowest, or 5 per cent. for the poorest pump and 82 per cent. for the highest.

Last spring I called on the owner of one of the largest ranches in southern California—a ranch where much of the water used in irrigation is pumped and where in consequence the importance of proper mechanical training has been made conspicuous. I told the owner of this ranch that our office wished to obtain the services of a man who had a knowledge of irrigation methods and who, in addition to that, was a skillful mechanical engineer; that we wished him to do two things: Investigate the efficiency of the pumping machinery in a particular district, advise the farmers how to correct defects where they were observed, and show them how to use water in the right way. The reply was that if his ranch had such a man the department could not obtain him; that such a man would be worth $20,000 a year, and that they were prepared to pay for the man who promised well a salary of $5,000 a year. This, of course, is an extreme case, a case where large interests were involved, but a better knowledge of mechanical principles to the small farmer and to the maker of farm machinery in the country at large is relatively just as important.

The importance of mechanical knowledge to the American farmer is just beginning to be appreciated. Until within the last ten years training in farm mechanics was practically ignored by our agricultural colleges, but in recent years some of the most progressive have established courses of instruction and begun investigations. The results of this innovation have been most encouraging. These colleges have, however, labored under one serious difficulty. It takes all the time and strength of instructors to do the work of the class room. They are not in a position to conduct investigations and collect data needed for their students, and there is at present a lack of any systematized information for use in the class room. Realizing this fundamental need in the training of the future generation of farmers, Dr. A. C. True, Director of the Office of Experiment Stations, in his report for 1904, recommended that the irrigation and drainage work of this office be extended to include investigation in the applications of power to other agricultural purposes besides irrigation. In support of this he made the following statement:

"The need of a better understanding of the principles of mechanics and of better training in the use of machinery is one of the features of American agriculture which has not yet been adequately recognized in the courses of instruction in our agricultural colleges or in the work of this department. We are the greatest makers and users of farm machinery in the world, and it is owing to this fact more than to any other single cause that we have been able to maintain our agricultural supremacy in the markets of the world. The cost of this machinery to the farmer is one of his heaviest outlays, and the gain by increasing its life through better care or its efficiency through more skillful operation can hardly be over-estimated. The difficulty of doing this is greater to-day than ever before. The character of this machinery every year becomes more complicated, requiring increased knowledge of engineering principles on the part of farmers. The traction engine, the steam plow, the combined harvester and thrasher operated by steam power, the automobile, the growing use of electricity as a motive power on the farm, the machinery now required in dairies, in the cultivation and harvesting of rice, in the growing of sugar beets and manufacture of beet sugar, are illustrations of the momentous changes in the character of farm machines which have taken place in the last fifty years. The increase in skill and mechanical knowledge required by farmers to operate these complex and costly machines compared to what was needed to operate the primitive tools of half a century ago cannot be stated in percentages. The leading European governments have recognized the revolutionary character of this feature of farm life more clearly than we have. Especially is this true of Germany and France, where both Governments are continuously investigating this subject. The recent investigations of the German Government to determine the possibility of using alcohol, which can be purchased at home to supplant gasoline, which is not produced in Germany, to operate farm engines, is an illustration of the Governmental studies being made in Europe."

This extension of the work of the Agricultural Department was approved by Secretary Wilson, who supplemented Dr. True's recommendation by an extended statement, which will be found in his report for 1904. From this I have taken the following extracts:

"Closely related to the healthfulness, convenience and cheapness of farm buildings is the right selection, care and use of farm machinery. The studies of pumping machinery have shown that the most important factor in its successful use is the mechanical skill of the farmer, and we are beginning to understand that the increased complexity and cost of farm machinery make the education of the American farmer along these lines more and more desirable.

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"Realizing the need of improvement in these matters, and partly to meet the requests of implement manufacturers for young men having agricultural and mechanical training which will enable them to design and construct implements suited to the conditions of the American farm, a number of agricultural colleges and experiment stations have inaugurated courses of instruction and begun systematic experimentation for the purpose of bringing about a general diffusion of intelligence about this feature of farm work. They have appealed to this department for aid in this work similar to that already given them in other lines of agricultural investigation.

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"The requests of the colleges and stations for aid in carrying out these investigations and in planning courses of instruction have been supplemented by numerous similar requests from farmers for advice and assistance about the selection and operation of different kinds of farm motors and other farm machinery. In the absence of any special arrangement for dealing with these problems, they have been referred to the office of experiment stations and dealt with by the irrigation and drainage division of that office; but there are at present no funds which can be utilized for systematic work along these lines; I am of the opinion that results of great value, alike to the farmers and the manufacturers of agricultural machinery, will come from the extension of the department's work in agricultural engineering to include studies of this character, in co-operation with the agricultural colleges and experiment stations. I have, therefore, asked Congress for an appropriation which will enable us to employ an expert in farm buildings and farm machinery, in connection with the irrigation and drainage investigations."

The inauguration of this work on the first of July and the selection of Professor Zintheo to carry out these investigations is, I feel confident, destined to mark a most useful and important extension of the work of our National Agricultural Department.

Professor Zintheo will explain some of the work he has begun and what we hope to do. This is a new field, and our plans must depend on the funds provided by Congress and on the clearer understanding which further experience will give. It is on this account an appreciated privilege to submit our views and plans to this Association and solicit your suggestions and criticism.

Supplementing what Professor Zintheo says there seem to be a few general lines of work in which the Department of Agriculture can be of great practical benefit to both farmer and manufacturer. One is the conducting of investigations and the publishing of bulletins regarding mechanical principles involved in the construction and use of farm machinery. This work will contribute to the efficiency of instruction in agricultural colleges and affect both the present and future generations of farmers. Another line of work is original investigation of the adaptation of new forms of power to farm work and their value as compared to animals. The studies of wind and alcohol outlined by Professor Zintheo are examples, of which many others might be given. The collection and publication of information by the department regarding improvements in the design of machinery, or of new devices used in agriculture, would have great practical value. Such work ought not to be restricted to machinery made in this country, but should keep track of progress in all parts of the world. The German and French Governments have done much in this direction, and its influence

[Continued on page 13]

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Under no circumstances do we allow commissions to advertising agents.

CONVENTION OF AMERICAN IMPLEMENT AND WAGON MANUFACTURERS

The twelfth annual convention of the National Association of Implement and Vehicle Manufacturers was held at Niagara Falls, N. Y., U. S. A., September 27th and 28th. This organization includes in its membership almost every prominent implement manufacturing concern in the United States, and its deliberations are of great importance to the trade.

We are reproducing elsewhere in this issue some of the addresses and papers which were presented to the convention, as they will be of interest to our readers in every country who like to know what is being said and done in America in implement circles.

American manufacturers of implements are intensely interested in the question of reciprocity and foreign commerce, as the exports of agricultural machinery from this country have increased more rapidly year by year than has been the case with any other line of manufacture. For that reason, we are reproducing on another page the report of the Foreign Commerce Committee, which discusses the subject at length, and in our next issue the report of the National Legislation Committee, which makes extended reference to the reciprocal relations of the United States with other countries.

The address of Professor John W. Gilmore, of Cornell University, on the subject of "Practical Farm Mechanics," which will appear in our next issue, contains some very valuable information in regard to the extent of the implement business in the United States, and the requirements for the successful employment of capital in the business of manufacturing agricultural implements.

The advantages resulting from improvements in agricultural machinery were presented in a paper by Mr. Elwood Mead, Chief of Irrigation and Drainage Investigations, at the office of Experimenting, Washington, D. C., Mr. Mead's address will be read with interest and it appears on another page.

Professor C. J. Zintheo, a practical implement and machine man, who is now in the employ of the United States Government, delivered an address on "Farm Machinery Investigation," which will be found on another page.

Mr. C. F. Huhlien was elected president for the ensuing year. The convention next year will meet in Chicago.

MACHINE TOOL PRICES

American manufacturers of machine tools are greatly interested in a recently published article affecting their trade. It was stated that manufacturers of machine tools were considering the advisability of advancing prices throughout the entire list, owing to the great demand for this class of product and the disappearance of accumulation due to extremely heavy buying.

"There is absolutely no foundation for the statement that the manufacturers of machine tools are considering the advisability of advancing prices throughout the entire list," said George F. Kenny, a member of the American Tool and Machine Company. "If there were any such movement contemplated by the other concerns in this trade we would have undoubtedly been apprised of the same. It is true that most of the manufacturers are so loaded with orders that they cannot promise delivery on new contracts within two or three months. On the other hand, the only condition that would justify the advancing of prices throughout the entire list would be another increase in the cost of material used for these goods. While there has been an increase in the cost of material within the past five or ten years, the prices of machine tools have not advanced to the same extent, owing to the fact that we have reduced the cost of production to a very great extent."

"I cannot conceive where the statement regarding an advance in the price of machine tools originated," said an official of a large manufacturing concern. "As we control practically 30 per cent. of the output of machine tools manufactured in this country, any movement contemplating an advance in prices would certainly affect our individual business and we would undoubtedly be the first to incite any movement of that nature.

"The trade is undoubtedly passing through a most prosperous era. The foreign demand for tools has reached great proportions and large export orders are being regularly received by American firms. The vast increase in the work of constructing new railroads and electric lines throughout the country has greatly augmented the demand for machine tools." In conclusion he stated: "While the demand for machine tools is greatly in excess of the supply, I am in a position to state for the trade in general that no advance in the price of these goods has been or is being contemplated."

AMERICAN RECORDS FOR FAST WORK ON LARGE CONTRACTS

Modern requirements in the world of work have been such that cost of an enterprise has taken second place to the question of the time necessary for the accomplishment. And time more than cost and more than enduring strength and finish has accounted for the machine that displaces men.

Perhaps the world awoke as thoroughly to the possibilities of time in a great construction in the awarding of the British contract for a bridge over the Athbara River in 1899 when that award came to a great bridge company in the United States. The Athbara, or Black River, traverses the Soudan in East Africa, and is one of the tributaries of the Nile. The British Government, finding need of a bridge for military purposes, came to this country as a time measure, and the company executing the work made more than good.

Plans had been accepted and the order was placed with the bridge company on January 24th, calling for a construction almost 500 yards in length. Twenty-nine days later the steel structure was shipped, and Lord Kitchener dedicated the open bridge on August 19th.

The fact was calculated to stir British manufacturers. Bridges were needed for the Tugela at Colenso and for the Blaauwkraus at Frere. The first bridge required seven spans of steel, each weighing 107 tons and 60,000 holes had to be punched for the structure. But in sixteen working days the pig iron for the steel had been converted and rolled, the structure fitted, and loaded into steamers. The second bridge, 338 feet long, was completed and shipped in just three weeks from the beginning of the work.

Still taking to heart this lesson of the American builders, an English concern last year undertook to replace an old wrought iron structure over the canal near Sheffield. The engineers took possession of the railway line at 9.20 o'clock one Sunday morning. At 12.20 o'clock the old bridge was under-built with a wheeled mechanism which carried it away on a side track, where it could be broken up. In fifteen minutes the new steel bridge was in place, weighing 60 tons, and at 2.30 o'clock that afternoon traffic on the road was resumed.

But over these steel constructions the United States still is in the lead, as demonstrated in a 15-story building in William street, New York. In twenty-five days the great steel skeleton was ready for the stone facings, and six weeks later the building, complete, was filled with tenants. In this building are express elevators which are run 1,500 feet a minute, or at the rate of a mile in a little more than three minutes.

America, adopting "hustle" as the watchword of business and industry, has affected the whole world. Its slogan is leaving no such thing as rest in either the commercial or industrial field. It was a Yankee inventor, for instance, who perfected a machine for wrapping powders of any nature and in any given quantity. So rapid is the work of these machines that a score of them will wrap all the drugs in powder form which the United States can take in a year. An American chocolate wrapping machine will do up 100 packages of the confection in a minute. A lath cutting machine will cut 52,000 laths in a day, representing the work of forty men. That nothing is too small in import for the American ideas of haste is shown in the electrical shoe polisher, which takes six shoes at a time and completes the polishing of the half dozen in just two minutes.

In the recent war with Russia the Japanese gave an example of quick work on a big naval scale. In the operations outside of Port Arthur a Japanese destroyer was badly damaged by a Russian shell. Almost one-third of the vessel was cut away astern, leaving only a bulkhead protecting the machinery. When the danger was over the vessel was beached and repairs were undertaken in dry dock. Within a month this new stern was complete and the vessel ready for service.

In times and conditions of peace far greater wonders are performed in the shipyard. One of the newest of the Cunard monsters of the deep is the "Carmania," which weighed 13,500 tons at launching, and which complete has a displacement of 30,000 tons. This vessel was built at Clydebank, and was ready for service in nine months after its keel was laid. In the building of the ship steel was placed at the rate of 1,420 tons a month.

Connected closely with shipbuilding in time-saving records are the machineries for loading, unloading and trimming cargoes. At some of the great grain elevators of the country wheat is drawn up from the holds of vessels at the rate of 20,000 bushels an hour. In the same connection is an automatic machine which through its six offshoots weighs, bags, ties up, registers and delivers 7,200 bags of wheat in an hour.

In the great coal docks at Cardiff are monster cranes handling coal in quantities displacing armies of men. The record of these cranes is loading a steamer with 9,234 tons of coal in twenty-eight hours, trimming the cargo automatically as it has loaded it. At Barry also these cranes have unloaded 1,900 tons of coal from a steamer and allowed the vessel to sail again on the same tide by which it came into the docks.

Our own Baltimore, however, yields nothing to the Briton in this work. In that Maryland capital are coal loading mechanisms which in a twenty-four hour day can handle 150,000 tons of coal if only enough vessels can be brought alongside to receive the cargoes.

In the same way the ore handling devices at the great steel mills of the United States are wonders of the world. Almost without the aid of hands iron ores are loaded and unloaded at the docks at a speed not to be touched by all the men who could be crowded in for the work. In one day a modern steel mill may turn out 2,700 tons of rails, sufficient for laying 21 miles of track.

In the same titanic scale the dredgers displace the men with the shovel and the pumps. The great crane shovel, which cuts its way in canal digging through soil and clay and mire, will lift 3,600 tons a day under ordinary conditions, thus accomplishing the work of 2,400 men with hand implements. One of the great suction dredges, working in the depths of a harbor channel, will pump 3,000 tons of sand and silt in an hour, depositing its load hundreds of feet away as occasion demands. How many men and how much old time paraphernalia such a machine displaces are hardly to be estimated.

But in this age of hustle and hurry some of the slower nations have not been as slow as popular imagination would have had them. A German, for instance, clearly has entered the Yankee field of small things in the perfecting of a dish washer which turns out 6,000 dishes an hour, washed and dried for the table at an instant's move.

Norway has not been credited with the greatest celerity in her movements as a people, and yet she has something approaching a record in the manufacture of paper. At Elsenthal recently a notary was taken to the woods, holding a stop-watch under oath in order to testify to rapidity in papermaking. The woodsmen began cutting at three trees at 7.35 o'clock in the morning. The wood was cut into blocks, macerated and reduced to pulp, and the first sheet of finished paper came from the mills at 9.34 o'clock. These sheets were driven two miles to the newspaper office, which at 10 o'clock presented a finished, printed newspaper. Thus in two hours and a half a standing tree became a daily paper, carrying with it some of the developments of the recent schism between the two sister kingdoms.

Machines in some of the hosiery factories of the world make 300,000 stitches in a minute. Shoemaking machines drive 300 steel tacks in a minute and build up 1,500 pairs of heels in a day. A cutler will make a carving knife in ten minutes, where once the hand workman spent five hours. The modern nailmaker turns out a 100-pound keg of nails in two hours, where once he would have required two weeks for the task. One man now tends 12 screw-cutting machines which turn out nine screws a second, a speed 4,000 times faster than hand work. A mule frame, with one man and two boys, will spin as much cotton yarn in a day as 1,100 women could have done working the old hand spinning wheels.

All for the reason that time is more than money in these modern days of rush and go. "How soon can I get that?" is the question of the man of affairs. How he gets it is no concern of his. And this man of affairs is becoming more impatient of delays day after day in geometrical progression.—*Arthur Fenn, in the Michigan Tradesman.*

INTERESTING AMERICAN MACHINERY

Improved machinery has placed the United States ahead of all the world in the cooperage business.

There are upwards of 300,000,000 barrels and circular packers manufactured in this country annually, and the demand increases so that this output must be steadily broadened in order to keep pace with the growth of the business. The largest demand for barrels is in the cement business, which approximately amounts to 35,000,000 a year for the trade, while flour comes next with a demand for 22,500,000; fence staples, bolts, nuts and nails require 15,000,000, and sugar 15,000,000. Roasted coffee, spices, crockery and fruits and vegetables use up about 5,000,000 barrels a year each, while the glassware trade, baking powder companies, distilled liquor manufacturers, and candy, tobacco and cheese packers are big users of barrels, averaging in each trade from 2,000,000 to 3,000,000 barrels. The demand for barrels for molasses, oil, lard and pork is also enormous, while dry paint, glue, snuff, oatmeal, screws, castings and general hardware articles annually increase the demand on the cooperage supply.

While the amount of expenditure for barrels can be closely estimated for a given year it is not possible to say how many barrels are in actual use. The life of a barrel is put down at one year by the trade, but that is far from true. The great majority of barrels are used many times. They begin as sugar or flour barrels and are then sold to the farmer for shipping his produce to the market. It may be they returned to him several times, carrying potatoes or pickles to market in the first trip and then cabbage or lettuce in the next, each cargo being lighter in weight than the previous one, owing to the weakened condition of the barrels. Finally, the barrel may serve out its life work as a garbage receptacle and be burned in the end in some tenement house to keep out the winter's chill. Thus it may be said that a barrel follows a more useful career than almost any other manufactured article, and its life is much longer than a season.

The demand for barrels is steadily increasing, because modern machinery has made it possible to make them for the trade cheaper than almost any other form of package. That it is the most convenient form of package has long been acknowledged. The ancient cooper's art was a skilled one, and the work of cutting out the staves and then assembling them required long practice and apprenticeship. To-day machinery performs in a fraction of the time what hand labor did so slowly and clumsily.

George Washington's life, after he retired from public service and went to live on his beautiful estate, Mount Vernon, was simple and methodical in the extreme. Every morning he rose early, made a plain toilet, and, although he had a body servant, washed and shaved himself. Before breakfast it was his custom to write a few letters with his favorite gold pen and then visit the stables. He kept his own accounts very carefully, and his handwriting was remarkable for neatness, accuracy and uniformity of stroke. His breakfast usually consisted of Indian cakes and honey and tea or coffee. After leisurely partaking of it, he daily mounted his horse and visited every corner of his property. His appearance on horseback was most imposing, as he always wore a riding frock of handsome drab-colored broadcloth, ornamented with plain gilt buttons and a waistcoat of fine scarlet cloth trimmed with gold lace and gilt buttons. His special attendant, Bishop, in scarlet livery, always rode behind him.

THE APPLICATION OF POWER TO FARM WORK

[Continued from page 11]

is shown in the improvement in design of their machines and implements, some of which are beginning to rival or surpass our own. The farm machinery museum connected with the agricultural high school of Berlin and the laboratory maintained by France in Paris for testing the principles of farm machinery and their adaptation to the work of the different French provinces, have done much for the farmer at home and to extend trade of manufacturers abroad. The establishment of such a museum or laboratory in Washington and the gathering there of the leading types of farm machinery made by different countries, would be an educational agency worth far more than its cost.

ONLY A PASSING THOUGHT

"Haven't you ever thought of going to work?" asked the farmer's wife of Saumtering Sam. "Yess'm," replied the veteran tramp, "I thought of it once—but I was deeleeryus at de time."—*Cleveland Plain Dealer.*

THE APPLICATION OF POWER TO FARM WORK

An Address by Prof. Elwood Mead, Chief of Irrigation and Drainage Investigation, Washington, D. C., delivered before the National Association of Agricultural Implement and Vehicle Manufacturers.

PROF. ELWOOD MEAD

Although agriculture is the oldest of human industries, its greatest improvement has been made in the last hundred years. Up to the beginning of the nineteenth century men plowed as they did in the time of Pharaoh and thrashed as they did in the days of Abraham. Progress in agriculture dates from the time when machinery began to be substituted for hand labor, from the time when it relieved the farm of the hardest tasks and gave greater rewards for the hours of toil. We can hardly realize the changes wrought by the long list of agricultural machines and implements which American ingenuity has brought forth, nor what this continent would be like if we still cut grain with a sickle and thrashed it with a flail.

Machinery enables us to grow the leading farm products with one-fifth the labor required fifty years ago. In that time the wages of farm laborers have more than doubled, yet the cost of producing crops has been lowered one-half and the quality greatly improved. Striking as are these statistics, they give no adequate conception of what agricultural machinery has done for the development of this nation, because its material benefits have been more than equalled by the social and intellectual gain which has come by relieving farmers from deadening toil. In a republic the quality of the man is of as much importance as what he earns, and while we cannot measure by percentage what machinery has done for the intellectual development of the farmer we know that swinging a hoe does not stimulate thought like operating the lever of a steam thrasher.

We need not undervalue the great achievements of the pioneer farmers to realize how much greater are the requirements of to-day. The courage, intelligence and skill with which our forefathers used their primitive tools, and the success they won, are a proud heritage. But their tools and their methods will not answer now. In the rapid series of changes wrought by the progress of invention the old tools have disappeared almost as completely as the Indian and buffalo. Gone also are the skill and dexterity with which the scythe, the hoe and the ax were used. The trouble we now labor under is that the evolution of farm machinery has gone on so rapidly that it has outstripped the farm laborer's growth in mechanical skill. He has forgotten the old methods and not fully mastered the new.

The American farmer is not only the largest user of farm machinery in the world; he is also the most wasteful. The average life in America of a self-binder is less than half what it is in Germany. The American farmer uses power machines because he cannot afford hand labor. It is too scarce and costly, and he is now facing certain tendencies which make his success more dependent on the economies of power than ever before. Other factors which enter into the cost of producing crops all tend to an increase. There is no more cheap fertile public land. The price of land is rising, so is the outlay for maintaining its fertility. Farm labor was never so scarce nor wages so high as now. The American farmer has to compete with the foreign farmer in prices he gets for his produce, and with the American railroad, mine, and factory in the prices he pays his help. The home competition in labor is becoming more direct and severe each year.

The building of suburban steam and trolley lines, the extension of telephones into farming districts, and free rural delivery, are bringing the city and country into a constantly closer union. Farm and city laborers meet and compare notes, and the city laborers meet and compare notes, and the farmer's son or the farm worker no longer hesitates to try his fortune in the factory if wages or conditions of labor seem more attractive. With the increasing wages and shortened hours of labor in the factory he is insisting more and more that farm work shall have the same privileges. In any event the influence of organized labor and the rising wages of the cities is felt to-day in every agricultural community. Men no longer work from sunup to sundown, and where labor is scarce, as in California, the hours are as rigorously restricted as in any city factory. If American agriculture is to maintain itself in the markets of the world, it must do this through a continued improvement in machinery which will make the individual man more and more effificient.

It is not possible to say how this will be done with respect to any particular machine, for the work of the inventor is always an advance into the unknown, but we may with profit consider some of the general influences which should be utilized to secure improvement in design and more efficient use of machinery. The first thing is better training for the American farmer in mechanical principles. American farm machinery is not rendering the service it should, because it is not selected with wisdom and not operated and cared for with skill. We buy a plow which needs a team of 1,700-pound horses to pull it, and then hitch it behind a team of 1,200-pound horses. The result is neither plow nor team is a success. We leave our wagons, our mowers and our self-binders exposed to rain and sun, thus lessening both their life and their service, and we do this without shame or reproach. We need in this country a public sentiment which will put the farmer who neglects or misuses machinery on the same plane with the farmer who has poor breeds of stock or who neglects to care for them. We need investigations which will enable farmers and manufacturers to adapt machinery more perfectly to the power that is to run it and the strength that is to control it. How much does the average farmer to-day know or think about the power required to pull any machine or the importance of having the size of machines adjusted to the size or number of horses which he keeps? And how much energy in this country is wasted by teams who walk too far for the work they do, or who are worn out by being harnessed to a load too heavy for them to pull? Investigations carried on last year by the Iowa State College to determine the relation between the weight of horses and the draft of breaking plows show how valuable to both the farmer and the maker of machinery a better understanding of these matters would be. When we have studied the relation of the power needed to operate machinery to the size and weight of the horses which supply this power, as we have studied the chemistry of feeding animals or the relation of fertilizers to the needs of soils, the factory will make better tools and the farmer will make more money out of their use. There has, however, been so little systematized study of the principles involved in the operation of farm machinery, and so little attention given to instruction in farm mechanics in our agricultural colleges and technical schools, that manufacturers have had difficulty in securing properly trained men, that is, men who combine mechanical training with a knowledge of agricultural science and practical familiarity with farm life.

I have thus far spoken solely of the use of animal power as a substitute for hand labor. We are, however, in the beginning of another evolution whose possibilities we are unable to forecast. This is the employment of steam, wind, gas and electricity as sources of power in farm work. How far these are to take the place of both men and animals we cannot predict, but every year sees their uses widening. Wind, which was at first used almost solely for pumping water for live stock, is being used to cut feed, saw wood, run the machinery of dairies, and it seems possible that with improvements in electrical storage it may in time light the farmer's house, furnish the heat to cook his dinner and iron his clothes. The potential power of the streams which rise on our mountain summits and flow down to the sea is enormous. Much of this is unutilized because heretofore the factory had to go to the stream, and this was not possible, but with the improvements in electrical transmission the stream now goes to the farm and the factory. The water falls of the Sierras now generate electricity which pumps water for the irrigation of farms in the Santa Clara Valley, 240 miles away. Steam and gas engines plow and pulverize the soil, plant the seed, pump water for the irrigation of the crop, run the cultivator, the harvester and the thrasher. Some farms now have more power and more complicated machinery than many extensive factories. On one ranch in California the farm machinery operated by gas or steam cost over $60,000, and the farm equipment of this character is being constantly increased. This kind of power seems to be displacing the horse, just as the locomotive has supplanted the stage coach. The automobile can go faster and longer than the trotter. The steam plow in some places does better work than the horse and does it cheaper. This year a gasoline engine attached to a harvester on the water-logged lands of the Northwest was able to run in fields where horses mired. Throughout the southern part of the United States there is a great field for the steam and gas motor. They can operate in the summer's heat, amid mosquitoes and flies, without discomfort and loss of efficiency which attends the use of the horse and mule.

To me the most interesting feature of the Lewis and Clarke Exposition, and one which was most significant of our advanced civilization in this country, was the splendid display of farm machinery in the agricultural building. No one could look at this without having pride in the men who require and use such tools. I filled page after page of my note book with a list of these evidences of American inventive skill. It includes dairy machinery which makes better butter than can be made by hand; a 30 horse-power steam plow which will turn over the soil of a good sized farm in a single day; a 40 horse-power traction engine which hauls its load over the country roads at five miles an hour, and requires as much mechanical skill to run it as a locomotive.

The full benefits of farm machinery are not realized, because the average farmer has not the mechanical training or the requisite skill to get the best results out of these complex tools. This has been brought home to us in our studies of pumping machinery used in lifting water for irrigation. Two years ago I gathered the results of 18 gasoline pumps installed in a valley in the Southwest. Thirteen of these had been abandoned, not because irrigation by pumping did not pay, but because the men who bought this machinery were not equal to keeping it in order. They had never before tried to run anything more complicated than a mule, and the change to a gas engine was too violent.

This year our investigations have included a large number of field tests of pumping machinery in Louisiana and California. Millions of dollars have been invested in this kind of machinery. Measured by value, nearly one-tenth of the irrigated products in this country are now grown with water lifted by pumps. In the rice districts of Louisiana one-fourth of the outlay in growing a crop is for pumping. Manifestly the efficiency of this machinery has much to do with the profits of farming. In the field tests made this year the highest efficiency was 16 times the lowest, or 5 per cent. for the poorest pump and 82 per cent. for the highest.

Last spring I called on the owner of one of the largest ranches in southern California—a ranch where much of the water used in irrigation is pumped and where in consequence the importance of proper mechanical training has been made conspicuous. I told the owner of this ranch that our office wished to obtain the services of a man who had a knowledge of irrigation methods and who, in addition to that, was a skillful mechanical engineer; that we wished him to do two things: Investigate the efficiency of the pumping machinery in a particular district, advise the farmers how to correct defects where they were observed, and show them how to use water in the right way. The reply was that if his ranch had such a man the department could not obtain him; that such a man would be worth $20,000 a year, and that they were prepared to pay for the man who promised well a salary of $5,000 a year. This, of course, is an extreme case, a case where large interests were involved, but a better knowledge of mechanical principles to the small farmer and to the maker of farm machinery in the country at large is relatively just as important.

The importance of mechanical knowledge to the American farmer is just beginning to be appreciated. Until within the last ten years training in farm mechanics was practically ignored by our agricultural colleges, but in recent years some of the most progressive have established courses of instruction and begun investigations. The results of this innovation have been most encouraging. These colleges have, however, labored under one serious difficulty. It takes all the time and strength of instructors to do the work of the class room. They are not in a position to conduct investigations and collect data needed for their students, and there is at present a lack of any systematized information for use in the class room. Realizing this fundamental need in the training of the future generation of farmers, Dr. A. C. True, Director of the Office of Experiment Stations, in his report for 1904, recommended that the irrigation and drainage work of this office be extended to include investigation in the applications of power to other agricultural purposes besides irrigation. In support of this he made the following statement:

"The need of a better understanding of the principles of mechanics and of better training in the use of machinery is one of the features of American agriculture which has not yet been adequately recognized in the courses of instruction in our agricultural colleges or in the work of this department. We are the greatest makers and users of farm machinery in the world, and it is owing to this fact more than to any other single cause that we have been able to maintain our agricultural supremacy in the markets of the world. The cost of this machinery to the farmer is one of his heaviest outlays, and the gain by increasing its life through better care or its efficiency through more skillful operation can hardly be over-estimated. The difficulty of doing this is greater to-day than ever before. The character of this machinery every year becomes more complicated, requiring increased knowledge of engineering principles on the part of farmers. The traction engine, the steam plow, the combined harvester and thrasher operated by steam power, the automobile, the growing use of electricity as a motive power on the farm, the machinery now required in dairies, in the cultivation and harvesting of rice, in the growing of sugar beets and manufacture of beet sugar, are illustrations of the momentous changes in the character of farm machines which have taken place in the last fifty years. The increase in skill and mechanical knowledge required by farmers to operate these complex and costly machines compared to what was needed to operate the primitive tools of half a century ago cannot be stated in percentages. The leading European governments have recognized the revolutionary character of this feature of farm life more clearly than we have. Especially is this true of Germany and France, where both Governments are continuously investigating this subject. The recent investigations of the German Government to determine the possibility of using alcohol, which can be purchased at home to supplant gasoline, which is not produced in Germany, to operate farm engines, is an illustration of the Governmental studies being made in Europe."

This extension of the work of the Agricultural Department was approved by Secretary Wilson, who supplemented Dr. True's recommendation by an extended statement, which will be found in his report for 1904. From this I have taken the following extracts:

"Closely related to the healthfulness, convenience and cheapness of farm buildings is the right selection, care and use of farm machinery. The studies of pumping machinery have shown that the most important factor in its successful use is the mechanical skill of the farmer, and we are beginning to understand that the increased complexity and cost of farm machinery make the education of the American farmer along these lines more and more desirable.

* * * * * * *

"Realizing the need of improvement in these matters, and partly to meet the requests of implement manufacturers for young men having agricultural and mechanical training which will enable them to design and construct implements suited to the conditions of the American farm, a number of agricultural colleges and experiment stations have inaugurated courses of instruction and begun systematic experimentation for the purpose of bringing about a general diffusion of intelligence about this feature of farm work. They have appealed to this department for aid in this work similar to that already given them in other lines of agricultural investigation.

* * * * * * *

"The requests of the colleges and stations for aid in carrying out these investigations and in planning courses of instruction have been supplemented by numerous similar requests from farmers for advice and assistance about the selection and operation of different kinds of farm motors and other farm machinery. In the absence of any special arrangement for dealing with these problems, they have been referred to the office of experiment stations and dealt with by the irrigation and drainage division of that office; but there are at present no funds which can be utilized for systematic work along these lines; I am of the opinion that results of great value, alike to the farmers and the manufacturers of agricultural machinery, will come from the extension of the department's work in agricultural engineering to include studies of this character, in co-operation with the agricultural colleges and experiment stations. I have, therefore, asked Congress for an appropriation which will enable us to employ an expert in farm buildings and farm machinery, in connection with the irrigation and drainage investigations."

The inauguration of this work on the first of July and the selection of Professor Zintheo to carry out these investigations is, I feel confident, destined to mark a most useful and important extension of the work of our National Agricultural Department.

Professor Zintheo will explain some of the work he has begun and what we hope to do. This is a new field, and our plans must depend on the funds provided by Congress and on the clearer understanding which further experience will give. It is on this account an appreciated privilege to submit our views and plans to this Association and solicit your suggestions and criticism.

Supplementing what Professor Zintheo says there seem to be a few general lines of work in which the Department of Agriculture can be of great practical benefit to both farmer and manufacturer. One is the conducting of investigations and the publishing of bulletins regarding mechanical principles involved in the construction and use of farm machinery. This work will contribute to the efficiency of instruction in agricultural colleges and affect both the present and future generations of farmers. Another line of work is original investigation of the adaptation of new forms of power to farm work and their value as compared to animals. The studies of wind and alcohol outlined by Professor Zintheo are examples, of which many others might be given. The collection and publication of information by the department regarding improvements in the design of machinery, or of new devices used in agriculture, would have great practical value. Such work ought not to be restricted to machinery made in this country, but should keep track of progress in all parts of the world. The German and French Governments have done much in this direction, and its influence

[Continued on page 13]

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Under no circumstances do we allow commissions to advertising agents.

CONVENTION OF AMERICAN IMPLEMENT AND WAGON MANUFACTURERS

The twelfth annual convention of the National Association of Implement and Vehicle Manufacturers was held at Niagara Falls, N. Y., U. S. A., September 27th and 28th. This organization includes in its membership almost every prominent implement manufacturing concern in the United States, and its deliberations are of great importance to the trade.

We are reproducing elsewhere in this issue some of the addresses and papers which were presented to the convention, as they will be of interest to our readers in every country who like to know what is being said and done in America in implement circles.

American manufacturers of implements are intensely interested in the question of reciprocity and foreign commerce, as the exports of agricultural machinery from this country have increased more rapidly year by year than has been the case with any other line of manufacture. For that reason, we are reproducing on another page the report of the Foreign Commerce Committee, which discusses the subject at length, and in our next issue the report of the National Legislation Committee, which makes extended reference to the reciprocal relations of the United States with other countries.

The address of Professor John W. Gilmore, of Cornell University, on the subject of "Practical Farm Mechanics," which will appear in our next issue, contains some very valuable information in regard to the extent of the implement business in the United States, and the requirements for the successful employment of capital in the business of manufacturing agricultural implements.

The advantages resulting from improvements in agricultural machinery were presented in a paper by Mr. Elwood Mead, Chief of Irrigation and Drainage Investigations, at the office of Experimenting, Washington, D. C., Mr. Mead's address will be read with interest and it appears on another page.

Professor C. J. Zintheo, a practical implement and machine man, who is now in the employ of the United States Government, delivered an address on "Farm Machinery Investigation," which will be found on another page.

Mr. C. F. Huhlien was elected president for the ensuing year. The convention next year will meet in Chicago.

MACHINE TOOL PRICES

American manufacturers of machine tools are greatly interested in a recently published article affecting their trade. It was stated that manufacturers of machine tools were considering the advisability of advancing prices throughout the entire list, owing to the great demand for this class of product and the disappearance of accumulation due to extremely heavy buying.

"There is absolutely no foundation for the statement that the manufacturers of machine tools are considering the advisability of advancing prices throughout the entire list," said George F. Kenny, a member of the American Tool and Machine Company. "If there were any such movement contemplated by the other concerns in this trade we would have undoubtedly been apprised of the same. It is true that most of the manufacturers are so loaded with orders that they cannot promise delivery on new contracts within two or three months. On the other hand, the only condition that would justify the advancing of prices throughout the entire list would be another increase in the cost of material used for these goods. While there has been an increase in the cost of material within the past five or ten years, the prices of machine tools have not advanced to the same extent, owing to the fact that we have reduced the cost of production to a very great extent."

"I cannot conceive where the statement regarding an advance in the price of machine tools originated," said an official of a large manufacturing concern. "As we control practically 30 per cent. of the output of machine tools manufactured in this country, any movement contemplating an advance in prices would certainly affect our individual business and we would undoubtedly be the first to incite any movement of that nature.

"The trade is undoubtedly passing through a most prosperous era. The foreign demand for tools has reached great proportions and large export orders are being regularly received by American firms. The vast increase in the work of constructing new railroads and electric lines throughout the country has greatly augmented the demand for machine tools." In conclusion he stated: "While the demand for machine tools is greatly in excess of the supply, I am in a position to state for the trade in general that no advance in the price of these goods has been or is being contemplated."

AMERICAN RECORDS FOR FAST WORK ON LARGE CONTRACTS

Modern requirements in the world of work have been such that cost of an enterprise has taken second place to the question of the time necessary for the accomplishment. And time more than cost and more than enduring strength and finish has accounted for the machine that displaces men.

Perhaps the world awoke as thoroughly to the possibilities of time in a great construction in the awarding of the British contract for a bridge over the Athbara River in 1899 when that award came to a great bridge company in the United States. The Athbara, or Black River, traverses the Soudan in East Africa, and is one of the tributaries of the Nile. The British Government, finding need of a bridge for military purposes, came to this country as a time measure, and the company executing the work made more than good.

Plans had been accepted and the order was placed with the bridge company on January 24th, calling for a construction almost 500 yards in length. Twenty-nine days later the steel structure was shipped, and Lord Kitchener dedicated the open bridge on August 19th.

The fact was calculated to stir British manufacturers. Bridges were needed for the Tugela at Colenso and for the Blaauwkraus at Frere. The first bridge required seven spans of steel, each weighing 107 tons and 69,000 holes had to be punched for the structure. But in sixteen working days the pig iron for the steel had been converted and rolled, the structure fitted, and loaded into steamers. The second bridge, 338 feet long, was completed and shipped in just three weeks from the beginning of the work.

Still taking to heart this lesson of the American builders, an English concern last year undertook to replace an old wrought iron structure over the canal near Sheffield. The engineers took possession of the railway line at 9.20 o'clock one Sunday morning. At 12.20 o'clock the old bridge was under-built with a wheeled mechanism which carried it away on a side track, where it could be broken up. In fifteen minutes the new steel bridge was in place, weighing 60 tons, and at 2.30 o'clock that afternoon traffic on the road was resumed.

But over these steel constructions the United States still is in the lead, as demonstrated in a 15-story building in William street, New York. In twenty-five days the great steel skeleton was ready for the stone facings, and six weeks later the building, complete, was filled with tenants. In this building are express elevators which are run 1,500 feet a minute, or at the rate of a mile in a little more than three minutes.

America, adopting "hustle" as the watchword of business and industry, has affected the whole world. Its slogan is leaving no such thing as rest in either the commercial or industrial field. It was a Yankee inventor, for instance, who perfected a machine for wrapping powders of any nature and in any given quantity. So rapid is the work of these machines that a score of them will wrap all the drugs in powder form which the United States can take in a year. An American chocolate wrapping machine will do up 100 packages of the confection in a minute. A lath cutting machine will cut 52,000 laths in a day, representing the work of forty men. That nothing is too small in import for the American ideas of haste is shown in the electrical shoe polisher, which takes six shoes at a time and completes

the polishing of the half dozen in just two minutes.

In the recent war with Russia the Japanese gave an example of quick work on a big naval scale. In the operations outside of Port Arthur a Japanese destroyer was badly damaged by a Russian shell. Almost one-third of the vessel was cut away astern, leaving only a bulkhead protecting the machinery. When the danger was over the vessel was beached and repairs were undertaken in dry dock. Within a month this new stern was complete and the vessel ready for service.

In times and conditions of peace far greater wonders are performed in the shipyard. One of the newest of the Cunard monsters of the deep is the "Carmania," which weighed 13,500 tons at launching, and which complete has a displacement of 30,000 tons. This vessel was built at Clydebank, and was ready for service in nine months after its keel was laid. In the building of the ship steel was placed at the rate of 1,420 tons a month.

Connected closely with shipbuilding in time-saving records are the machineries for loading, unloading and trimming cargoes. At some of the great grain elevators of the country wheat is drawn up from the holds of vessels at the rate of 20,000 bushels an hour. In the same connection is an automatic machine which through its six offshoots weighs, bags, ties up, registers and delivers 7,200 bags of wheat in an hour.

In the great coal docks at Cardiff are monster cranes handling coal in quantities displacing armies of men. The record of these cranes is loading a steamer with 9,234 tons of coal in twenty-eight hours, trimming the cargo automatically as it has loaded it. At Barry also these cranes have unloaded 1,900 tons of coal from a steamer and allowed the vessel to sail again on the same tide by which it came into the docks.

Our own Baltimore, however, yields nothing to the Briton in this work. In that Maryland capital are coal loading mechanisms which in a twenty-four hour day can handle 150,000 tons of coal if only enough vessels can be brought alongside to receive the cargoes.

In the same way the ore handling devices at the great steel mills of the United States are wonders of the world. Almost without the aid of hands iron ores are loaded and unloaded at the docks at a speed not to be touched by all the men who could be crowded in for the work. In one day a modern steel mill may turn out 2,700 tons of rails, sufficient for laying 21 miles of track.

In the same titanic scale the dredgers displace the men with the shovel and the pumps. The great crane shovel, which cuts its way in canal digging through soil and clay and mire, will lift 3,600 tons a day under ordinary conditions, thus accomplishing the work of 2,400 men with hand implements. One of the great suction dredges, working in the depths of a harbor channel, will pump 3,000 tons of sand and silt in an hour, depositing its load hundreds of feet away as occasion demands. How many men and how much old time paraphernalia such a machine displaces are hardly to be estimated.

But in this age of hustle and hurry some of the slower nations have not been as slow as popular imagination would have had them. A German, for instance, clearly has entered the Yankee field of small things in the perfecting of a dish washer which turns out 6,000 dishes an hour, washed and dried for the table at an instant's move.

Norway has not been credited with the greatest celerity in her movements as a people, and yet she has something approaching a record in the manufacture of paper. At Elsenthal recently a notary was taken to the woods, holding a stop-watch under oath in order to testify to rapidity in papermaking. The woodsmen began cutting at three trees at 7.35 o'clock in the morning. The wood was cut into blocks, macerated and reduced to pulp, and the first sheet of finished paper came from the mills at 9.34 o'clock. These sheets were driven two miles to the newspaper office, which at 10 o'clock presented a finished, printed newspaper. Thus in two hours and a half a standing tree became a daily paper, carrying with it some of the developments of the recent schism between the two sister kingdoms.

Machines in some of the hosiery factories of the world make 300,000 stitches in a minute. Shoemaking machines drive 300 steel tacks in a minute and build up 1,500 pairs of heels in a day. A cutler will make a carving knife in ten minutes, where once the hand workman spent five hours. The modern nailmaker turns out a 100-pound keg of nails in two hours, where once he would have required two weeks for the task. One man now tends 12 screw-cutting machines which turn out nine screws a second, a speed 4,000 times faster than hand work. A mule frame, with one man and two boys, will spin as much cotton yarn in a day as 1,100 women could have done working the old hand spinning wheels.

All for the reason that time is more than money in these modern days of rush and go. "How soon can I get that?" is the question of the man of affairs. How he gets it is no concern of his. And this man of affairs is becoming more impatient of delays day after day in geometrical progression.—*Arthur Fenn, in the Michigan Tradesman.*

INTERESTING AMERICAN MACHINERY

Improved machinery has placed the United States ahead of all the world in the cooperage business.

There are upwards of 300,000,000 barrels and circular packers manufactured in this country annually, and the demand increases so that this output must be steadily broadened in order to keep pace with the growth of the business. The largest demand for barrels is in the cement business, which approximately amounts to 35,000,000 a year for the trade, while flour comes next with a demand for 22,500,000; fence staples, bolts, nuts and nails require 15,000,000, and sugar 15,000,000. Roasted coffee, spices, crockery and fruits and vegetables use up about 5,000,000 barrels a year each, while the glassware trade, baking powder companies, distilled liquor manufacturers, and candy, tobacco and cheese packers are big users of barrels, averaging in each trade from 2,000,000 to 3,000,000 barrels. The demand for barrels for molasses, oil, lard and pork is also enormous, while dry paint, glue, snuff, oatmeal, screws, castings and general hardware articles annually increase the demand on the cooperage supply.

While the amount of expenditure for barrels can be closely estimated for a given year it is not possible to say how many barrels are in actual use. The life of a barrel is put down at one year by the trade, but that is far from true. The great majority of barrels are used many times. They begin as sugar or flour barrels and are then sold to the farmer for shipping his produce to the market. It may be they returned to him several times, carrying potatoes or pickles to market in the first trip and then cabbage or lettuce in the next, each cargo being lighter in weight than the previous one, owing to the weakened condition of the barrels. Finally, the barrel may serve out its life work as a garbage receptacle and be burned in the end in some tenement house to keep out the winter's chill. Thus it may be said that a barrel follows a more useful career than almost any other manufactured article, and its life is much longer than a season.

The demand for barrels is steadily increasing, because modern machinery has made it possible to make them for the trade cheaper than almost any other form of package. That it is the most convenient form of package has long been acknowledged. The ancient cooper's art was a skilled one, and the work of cutting out the staves and then assembling them required long practice and apprenticeship. To-day machinery performs in a fraction of the time what hand labor did so slowly and clumsily.

George Washington's life, after he retired from public service and went to live on his beautiful estate, Mount Vernon, was simple and methodical in the extreme. Every morning he rose early, made a plain toilet, and, although he had a body servant, washed and shaved himself. Before breakfast it was his custom to write a few letters with his favorite gold pen and then visit the stables. He kept his own accounts very carefully, and his handwriting was remarkable for neatness, accuracy and uniformity of stroke. His breakfast usually consisted of Indian cakes and honey and tea or coffee. After leisurely partaking of it, he daily mounted his horse and visited every corner of his property. His appearance on horseback was most imposing, as he always wore a riding frock of handsome drab-colored broadcloth, ornamented with plain gilt buttons and a waistcoat of fine scarlet cloth trimmed with gold lace and gilt buttons. His special attendant, Bishop, in scarlet livery, always rode behind him.

THE APPLICATION OF POWER TO FARM WORK

[Continued from page 11]

is shown in the improvement in design of their machines and implements some of which are beginning to rival or surpass our own. The farm machinery museum connected with the agricultural high school of Berlin and the laboratory maintained by France in Paris for testing the principles of farm machinery and their adaptation to the work of the different French provinces, have done much for the farmer at home and to extend trade of manufacturers abroad. The establishment of such a museum or laboratory in Washington and the gathering there of the leading types of farm machinery made by different countries, would be an educational agency worth far more than its cost.

ONLY A PASSING THOUGHT

"Haven't you ever thought of going to work?" asked the farmer's wife of Sauntering Sam. "Yess'm," replied the veteran tramp. "I thought of it once—but I was deeleeryus at de time."—*Cleveland Plain Dealer.*

MODERN AMERICAN METHODS IN GROWING CORN

Last year the corn crop of the United States had a value estimated at over a billion dollars. This year it may be larger.

The United States as a nation might be called the "Kingdom of Corn," both because Indian corn—something no other country produces in great quantities—is its most valuable material asset, and because the men who produce corn are more typically American than any other element of our population.

The magnitude of the corn-growing interests can hardly be overestimated. Of the 29,287,070 inhabitants of the United States engaged in gainful occupations in 1900, 10,438,219 were engaged in agriculture, as compared with only 7,112,304 in manufacturing and mechanical pursuits, and a large proportion of these raise more or less of the various kinds of corn. The most extensive manufacturers in this country are those of iron and steel products. The United States Steel Co., the largest industrial combination in the world, with a capital of a billion and a half, controls only from 65 to 75 per cent. of the annual output of iron and steel manufactures in the United States. The census of 1900 gave this total annual product a value of $803,968,273. Yet, in the face of the spectacular existence of a corporation capitalized at $1,400,000,000 and of mighty blast furnaces and rolling mills, the farmers of this country the same year, quietly working each one for himself, with no thought of forming gigantic combinations, produced a crop of corn valued at $828,258,326, $25,000,000 more than all the efforts of trust workers and highly paid laborers could bring forth from the greatest manufacturing enterprise on the globe.

The extent to which this stupendous growth of the cornfields of the West and Southwest has been furthered by the efforts of the transportation companies is adequately understood only by those who are most familiar with the history of the more recently settled States of the Union.

A great deal of an educational nature has been accomplished through the issuance of free literature giving instruction in the adaptability of different crops to different soils, in the rotation of crops, in methods of irrigation and in the choice of seed. But perhaps the most signal success which has attended any of the railroad efforts along this line is that which has crowned the work of the "seed corn specials" sent out the past two years through Iowa by the railroads. These were special trains, consisting of a baggage car, two private cars and one or two audience coaches, and carrying railroad officials, representatives of the daily and agricultural press and two members of the agricultural staff of the Iowa State College. The two latter, professors of agronomy, at each stop lectured for twenty or thirty minutes to the assembled crowd of farmers on methods of planting, of choosing seed, and so on.

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Not only has Iowa its seed corn specials, but the Dakotas and Minnesota have their "seed-wheat trains" and Kansas has been carrying on extensive railroad investigations into the possibilities of subsoil cultivation. It is largely through such help from the railroads that American farmers are enabled to make such a good profit in the world's market. No political consideration hampers these industrial agents in doing what is to the best advantage of their territory and of themselves, for they control their own rate-making and have no interest in catering to one or another class of producers influential at Washington. To make farming more profitable means not only to increase by geometrical progression the wealth of the country, but also to increase the proportion of farmers in the population, to add to their representation in the Government and to insure a more healthy, contented and intelligent American citizenship.

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The number of armature winders employed in 1890 in the four establishments, was 28, which number increased to 91 in 1903—an increase of 225 per cent., and an increase of 122 per cent. over the average number employed in the ten years from 1890 to 1899, inclusive. The number of hours per week of work decreased from 58.29 in 1900 to 54.63 in 1903. In 1900 the average wages per hour for these men was $0.2116, which increased to $0.2427 in 1903, or 14.7 per cent. The wages for 1903 also show an increase of 12.8 per cent. over the average wages paid in the ten years from 1890 to 1899, inclusive.

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Machinists were employed to the number of 68 in four establishments in 1900, which number gradually increased to 357 in 1903. Hours of labor per week were reduced from an average of 57.37 in 1900 to 55.15 in 1903. Wages per hour increased 7.6 per cent., or from $0.2499 per hour in 1900 to $0.2689 in 1903. For the first ten years the wages averaged $0.2473 per hour.

Pattern makers show a large gain both in the number of men employed and in wages, although the data given are taken from only one representative establishment. In 1900 there were two men employed against ten in 1903. For the ten years from 1890 to 1899 the average was four men. The hours of work per week were reduced from 59 to 55. Average wages per hour increased 23.7 per cent.—from $0.30 per hour in 1900 to $0.3710 in 1903. The average wages per hour for the first ten years of this period was $0.3191.

Bulletin No. 59 of the Bureau of Labor, just issued, contains further data on wages and hours of labor, giving the figures for 1904, which in the electrical industry, show slight changes from those here given for 1903. The bulletin also contains data on retail prices of food. The two subjects treated in the bulletin are the beginning of a regular series of bulletin articles to be published annually, supplementing and continuing the two reports named.

EXPORT IMPLEMENT AGE

POUR LA CIRCULATION À L'ÉTRANGER EXCLUSIVEMENT.

Journal indépendant exclusivement consacré aux intérêts du commerce d'exportation des machines agricoles, pompes, moulins à vent, outils de fermes, fournitures pour crèmeries et articles spéciaux de quincaillerie.

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Dans le Répertoire d'adresses à l'usage des acheteurs, dans la première partie de ce livre nous donnons les renseignements en français; nous avons recours à ce moyen afin de faciliter la correspondance avec les maisons qui font insérer des annonces dans ce journal.

On suppose généralement que le moine Roger Bacon est le premier homme qui ait fait des lunettes en l'année 1280; mais sur une tombe de Florence, portant la date de 1290, une inscription en attribue l'honneur à un autre homme. La voici: "Ci-gît Salvino degli Aramati, inventeur des lunettes. Veuille Dieu lui pardonner ses péchés." Les lunettes devinrent communes en Hollande et en Allemagne au 16ème siècle.

Napoléon, à l'apogée de sa puissance, n'avait pas à sa disposition nos commodités de tous les jours: le chauffage à la vapeur, l'eau à profusion dans les maisons, le gaz, la lumière électrique, les chemins de fer, les bateaux à vapeur, le télégraphe électrique, le téléphone, le phonographe, les journaux quotidiens, les revues et mille autres articles d'utilité qui font aujourd'hui parties des nécessités quotidiennes du moindre manœuvre.

Joseph Gillott, joailler anglais, inventa la plume d'acier. Un jour il fendit accidentellement l'extrémité d'un de ses délicats outils d'acier, et, pris d'un accès de mauvaise humeur, il le jeta sur le plancher. Une heure plus tard il dut écrire une lettre. Où était sa plume d'oie? Il la chercha de tous les côtés, mais en vain. Jetant enfin les yeux sur le plancher, il découvrit l'outil brisé. Il essaya d'écrire avec la pointe de cet instrument et réussit. Il se mit dès lors à fabriquer des plumes d'acier.

Les Américains en Chine

Grâce à une concession impériale l'American China Development Company est en train de construire, en Chine, une ligne de chemin de fer qui doit réunir Canton, dans le sud, à Hankow, sur le fleuve Yangtse-Kiang, ce qui représente une distance de 800 milles. Cette compagnie vient d'achever une ligne de Canton à Samshui: la distance est de 29 milles. Le jour fixé pour l'inauguration, au milieu du tumulte des sifflets de locomotive, du son des cloches et des tams-tams, des détonations des feux d'artifice, les consuls étrangers, des fonctionnaires chinois et une foule d'appréciateurs prenaient le premier train qui circulât sur la voie nouvellement achevée et inauguraient ainsi une ère nouvelle de progrès et de prospérité pour ce grand empire. Les Chinois qui sont venus en contact avec les étrangers et ont vu de près les avantages des institutions modernes, voient d'un bon œil cette innovation; ils n'ont pas hésité, dès le début, à faire usage de la nouvelle ligne, ce qui permet de bien augurer de l'avenir financier de la principale grande ligne de Chine quand elle sera achevée. Sur la ligne de 11 milles qui s'étend jusqu'à Fat Shan circulent journellement, du lever au coucher du soleil, plus de 4,000 voyageurs, ce qui est un record vraiment merveilleux. La ligne qui doit unir Canton à Hankow passera à travers les régions les plus riches et les plus productives de l'empire, et grâce à la sécurité absolue à laquelle peuvent s'attendre les expéditeurs, elle rendre non seulement de grands services à toutes les classes du commerce, mais sera de plus une source de gros revenus pour les actionnaires de cette audacieuse entreprise.

Le café a été découvert en 1285 par un derviche du nom de Hadji Omar, natif de la ville de Mocha—d'où le nom familier. Hadji Omar, perdu dans un désert de l'Arabie mourait de faim quand il découvrit quelques petites baies rondes; mais, essayant de les manger, il les trouva, pour sa plus grande mortification, insupportablement amères. Il essaya alors de les faire griller, et finalement en fit infuser quelques-unes, ainsi grillées, dans de l'eau. Le café était désormais inventé, et bien que l'infusion d'Omar ne fut point de premier choix, celui-ci la trouva si agréable que dès qu'il put se rendre dans sa ville natale, il fit connaitre la boisson nouvelle aux sages de l'endroit. Ceux-ci la trouvèrent divine, et du derviche ils firent un saint.

Testament unique d'un inventeur

M. Alfred B. Nobel, inventeur de la nitroglycerine et de la dynamite, est mort en 1896 en laissant une fortune évaluée à dix millions de dollars. Il légua son entière fortune à la science; le testament stipule que le revenu seul doit être employé, et ce revenu est annuellement divisé en cinq portions égales. L'une est réservée à l'homme qui fait la plus importante découverte en chimie, une autre est pour celui qui fait la plus importante découverte en physiologie ou en médicine, une troisième échoit à l'auteur du meilleur ouvrage littéraire portant un cachet d'idéalisme, la cinquième est pour le philanthrope qui a le plus fait pour l'établissement de la fraternité parmi les nations, pour la suppression ou la réduction des tions, pour la suppression on la réduction des armées permanentes et pour la création et la propagation des congrès de paix. Dans la répartition des dons, on ne tient aucun compte de la nationalité, car Nobel lui-même fut un cosmopolite qui vécut dans beaucoup de pays. Les amis de M. Bartholdt, sénateur de Saint-Louis, ont résolu d'obtenir pour cet homme d'état le prix qui revient, de par la cinquième clause du testament, au philanthrope le plus éminent. Ils s'appuient sur le fait que M. Bartholdt se consacra corps et âme au Congrès interparlementaire tenu à Saint-Louis l'été dernier. Grâce aux efforts de M. Bartholdt, ce congrès a prié M. le président Roosevelt de reconvoquer la conférence de La Haye. Si M. Bartholdt obtient le prix, il recevra la jolie somme de 35,000 dollars.

La Grande Bretagne revendique l'honneur d'avoir été la première à faire usage du timbre de la poste. Le premier, qui fut employé à Londres dès l'année 1660, était quelque chose de très simple; il consistait en un petit cercle divisé en deux parties. Dans la moitié supérieure se trouvaient deux lettres, indiquant le mois, tandis que la moitié inférieure portait le jour du mois. On ne cherchait pas à désigner l'année.

La coutume qui consiste à se découvrir devant une dame date de l'époque de la chevalerie. Les chevaliers n'apparaissaient en public qu'armés de pied en cap. Toutefois, en entrant dans une maison amie ou dans une chambre où se trouvaient des dames, le chevalier prit l'habitude d'ôter son casque: il exprimait ainsi que, se trouvant en présence d'amis, il n'était exposé à aucun danger.

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The number of armature winders employed in 1890 in the four establishments, was 28, which number increased to 91 in 1903—an increase of 225 per cent., and an increase of 122 per cent. over the average number employed in the ten years from 1890 to 1899, inclusive. The number of hours per week of work decreased from 58.29 in 1900 to 54.63 in 1903. In 1900 the average wages per hour for these men was $0.2116, which increased to $0.2427 in 1903, or 14.7 per cent. The wages for 1903 also show an increase of 12.8 per cent. over the average wages paid in the ten years from 1890 to 1899, inclusive.

There were eight brass finishers employed in 1900 in the one establishment cited against 42 in 1903. The average number employed between 1890 and 1899 was 16. Men in this department worked fifty-nine hours a week in 1900—which was also the average for the first ten years of the report—and fifty-five hours in 1903. For the ten years from 1890-1899 they earned an average of $0.2534 an hour, which increased to $0.2667 in 1903, or 5.2 per cent.

Machinists were employed to the number of 68 in four establishments in 1900, which number gradually increased to 357 in 1903. Hours of labor per week were reduced from an average of 57.37 in 1900 to 55.15 in 1903. Wages per hour increased 7.6 per cent., or from $0.2499 per hour in 1900 to $0.2689 in 1903. For the first ten years the wages averaged $0.2473 per hour.

Pattern makers show a large gain both in the number of men employed and in wages, although the data given are taken from only one representative establishment. In 1900 there were two men employed against ten in 1903. For the ten years from 1890 to 1899 the average was four men. The hours of work per week were reduced from 59 to 55. Average wages per hour increased 23.7 per cent.—from $0.30 per hour in 1900 to $0.3710 in 1903. The average wages per hour for the first ten years of this period was $0.3191.

Bulletin No. 59 of the Bureau of Labor, just issued, contains further data on wages and hours of labor, giving the figures for 1904, which in the electrical industry, show slight changes from those here given for 1903. The bulletin also contains data on retail prices of food. The two subjects treated in the bulletin are the beginning of a regular series of bulletin articles to be published annually, supplementing and continuing the two reports named.

EXPORT IMPLEMENT AGE

POUR LA CIRCULATION À L'ÉTRANGER EXCLUSIVEMENT.

Journal indépendant exclusivement consacré aux intérêts du commerce d'exportation des machines agricoles, pompes, moulins à vent, outils de fermes, fournitures pour crèmeries et articles spéciaux de quincaillerie.

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Dans le Répertoire d'adresses à l'usage des acheteurs, dans la première partie de ce livre nous donnons les renseignements en français; nous avons recours à ce moyen afin de faciliter la correspondance avec les maisons qui font insérer des annonces dans ce journal.

On suppose généralement que le moine Roger Bacon est le premier homme qui ait fait des lunettes en l'année 1280; mais sur une tombe de Florence, portant la date de 1290, une inscription en attribue l'honneur à un autre homme. La voici: "Ci-git Salvino degli Aramati, inventeur des lunettes. Veuille Dieu lui pardonner ses péchés." Les lunettes devinrent communes en Hollande et en Allemagne au 16ème siècle.

Napoléon, à l'apogée de sa puissance, n'avait pas à sa disposition nos commodités de tous les jours: le chauffage à la vapeur, l'eau à profusion dans les maisons, le gaz, la lumière électrique, les chemins de fer, les bateaux à vapeur, le télégraphe électrique, le téléphone, le phonographe, les journaux quotidiens, les revues et mille autres articles d'utilité qui font aujourd'hui parties des nécessités quotidiennes du moindre manœuvre.

Joseph Gillott, joailler anglais, inventa la plume d'acier. Un jour il fendit accidentellement l'extrémité d'un de ses délicats outils d'acier, et, pris d'un accès de mauvaise humeur, il le jeta sur le plancher. Une heure plus tard il dut écrire une lettre. Où était sa plume d'oie? Il la chercha de tous les côtés, mais en vain. Jetant enfin les yeux sur le plancher, il découvrit l'outil brisé. Il essaya d'écrire avec la pointe de cet instrument et réussit. Il se mit dès lors à fabriquer des plumes d'acier.

Les Américains en Chine

Grâce à une concession impériale l'American China Development Company est en train de construire, en Chine, une ligne de chemin de fer qui doit réunir Canton, dans le sud, à Hankow, sur le fleuve Yangtse-Kiang, ce qui représente une distance de 800 milles. Cette compagnie vient d'achever une ligne de Canton à Samshui: la distance est de 29 milles. Le jour fixé pour l'inauguration, au milieu du tumulte des sifflets de locomotive, du son des cloches et des tams-tams, des détonations des feux d'artifice, les consuls étrangers, des fonctionnaires chinois et une foule d'appréciateurs prenaient le premier train qui circulât sur la voie nouvellement achevée et inauguraient ainsi une ère nouvelle de progrès et de prospérité pour ce grand empire. Les Chinois qui sont venus en contact avec les étrangers et ont vu de près les avantages des institutions modernes, voient d'un bon œil cette innovation; ils n'ont pas hésité, dès le début, à faire usage de la nouvelle ligne, ce qui permet de bien augurer de l'avenir financier de la principale grande ligne de Chine quand elle sera achevée. Sur la ligne de 11 milles qui s'étend jusqu'à Fat Shan circulent journellement, du lever au coucher du soleil, plus de 4,000 voyageurs, ce qui est un record vraiment merveilleux. La ligne qui doit unir Canton à Hankow passera à travers les régions les plus riches et les plus productives de l'empire, et grâce à la sécurité absolue à laquelle peuvent s'attendre les expéditeurs, elle rendre non seulement de grands services à toutes les classes du commerce, mais sera de plus une source de gros revenus pour les actionnaires de cette audacieuse entreprise.

Le café a été découvert en 1285 par un derviche du nom de Hadji Omar, natif de la ville de Mocha—d'où le nom familier. Hadji Omar, perdu dans un désert de l'Arabie mourait de faim quand il découvrit quelques petites baies rondes; mais, essayant de les manger, il les trouva, pour sa plus grande mortification, insupportablement amères. Il essaya alors de les faire griller, et finalement en fit infuser quelques-unes, ainsi grillées, dans de l'eau. Le café était désormais inventé, et bien que l'infusion d'Omar ne fut point de premier choix, celui-ci la trouva si agréable que dès qu'il put se rendre dans sa ville natale, il fit connaître la boisson nouvelle aux sages de l'endroit. Ceux-ci la trouvèrent divine, et du derviche ils firent un saint.

Testament unique d'un inventeur

M. Alfred B. Nobel, inventeur de la nitroglycerine et de la dynamite, est mort en 1896 en laissant une fortune évaluée à dix millions de dollars. Il légua son entière fortune à la science; le testament stipule que le revenu seul doit être employé, et ce revenu est annuellement divisé en cinq portions égales. L'une est réservée à l'homme qui fait la plus importante découverte en chimie, une autre est pour celui qui fait la plus importante découverte en physiologie ou en médicine, une troisième échoit à l'auteur du meilleur ouvrage littéraire portant un cachet d'idéalisme, la cinquième est pour le philanthrope qui a le plus fait pour l'établissement de la fraternité parmi les nations, pour la suppression ou la réduction des tions, pour la suppression ou la réduction des armées permanentes et pour la création et la propagation des congrès de paix. Dans la répartition des dons, on ne tient aucun compte de la nationalité, car Nobel lui-même fut un cosmopolite qui vécut dans beaucoup de pays. Les amis de M. Bartholdt, sénateur de Saint-Louis, ont résolu d'obtenir pour cet homme d'état le prix qui revient, de par la cinquième clause du testament, au philanthrope le plus éminent. Ils s'appuient sur le fait que M. Bartholdt se consacra corps et âme au Congrès interparlementaire tenu à Saint-Louis l'été dernier. Grâce aux efforts de M. Bartholdt, ce congrès a prié M. le président Roosevelt de reconvoquer la conférence de La Haye. Si M. Bartholdt obtient le prix, il recevra la jolie somme de 35,000 dollars.

La Grande Bretagne revendique l'honneur d'avoir été la première à faire usage du timbre de la poste. Le premier, qui fut employé à Londres dès l'année 1660, était quelque chose de très simple; il consistait en un petit cercle divisé en deux parties. Dans la moitié supérieure se trouvaient deux lettres, indiquant le mois, tandis que la moitié inférieure portait le jour du mois. On ne cherchait pas à désigner l'année.

La coutume qui consiste à se découvrir devant une dame date de l'époque de la chevalerie. Les chevaliers n'apparaissaient en public qu'armés de pied en cap. Toutefois, en entrant dans une maison amie ou dans une chambre où se trouvaient des dames, le chevalier prit l'habitude d'ôter son casque: il exprimait ainsi que, se trouvant en présence d'amis, il n'était exposé à aucun danger.

INTENTIONAL SECOND EXPOSURE

Le systéme teléphonique américain

M. J. H. Woodbury, ingénieur adjoint de l'American Telephone and Telegraph Company, a fait récemment devant la branche des arts et des sciences de l'Institut polytechnique de Brooklin, une intéressante conférence sur "le système téléphonique d'aujourd'hui." Parlant de l'étendue du présent système M. Woodbury a dit:

"La somme totale des lignes téléphoniques, pour le système Bell, s'élève, en moyenne, à trois milles vingt-neuf centièmes pour chaque téléphone en usage, et, à l'exclusion des lignes de longue distance, 55 pour cent des fils sont sous terre. Quand une personne demande à être mise en communication avec un autre téléphone, la longueur de ligne qui'est mise à sa disposition est de six milles cinquante-huit centièmes: il est assurément moins coûteux de parler que de voyager. Les fils de longue distance réunissent le système entier en un tout qui s'étend des côtes de l'Atlantique jusqu'à la pente occidentale de la vallée du Mississippi, où la faible distance de 40 milles encore inoccupée par les lignes téléphoniques sera bientôt couverte, mettant ainsi l'Est en communication avec le système similaire de lignes qui unissent les différentes villes de la côte du Pacifique.

"L'augmentation des lignes du système est due à l'intention de répandre l'usage du téléphone jusque dans les moindres hameaux des Etats-Unis, et, dans toutes les villes et tous les villages, de mettre un téléphone, à un prix aussi peu elevé que posible," à la portée immédiate de toutes les personnes dont le revenu est suffisant pour leur permettre de prendre un tramway." On voit jusqu'à quel point ce projet a été mis à exécution par le fait que, encore qu'il n'y ait, d'après le dernier recensement, que 10,602 villes, villages, hameaux et bourgs d'incorporés aux Etats-Unis, il n'en existe pas moins un service téléphonique entre 26,128 communautés diverses, et la croissance continue de ces communautés retarde, d'année en année, le point de saturation du service téléphonique dès longtemps prédit par des personnes d'humeur un peu trop conservatrice."

Au sujet de la téléphonie de longue distance il s'exprime ainsi: "Le service de ligne à péage commença avec la ligne établie entre Boston et Lowell en 1879, et cet essai révéla d'emblée l'avenir splendide que l'on pouvait attendre du téléphone et les très nombreuses difficultés techniques qui ont été surmontées depuis. Dans l'espace de vingt-cinq années, le service de longue distance qui ne comptait à l'origine que 27 milles de fils de ligne s'est élevé à 275,000 milles. Mais il ne faut pas considérer ces lignes comme comprenant toutes les lignes en dehors d'une municipalité quelconque, car elles peuvent être rattachées à des lignes d'environ 4 millions de milles de longueur, et comme elles rayonnent vers ces points elles permettent d'atteindre l'abonné que l'on désire.

"Quand une personne fait usage du téléphone de longue distance, une propriété de grande valeur est mise à son service exclusif; —par exemple, en parlant de Boston à Omaha, comme le fait tous les matins une maison d'affaires, la valeur de la fraction de ligne et des appareils que l'on a à sa sisposition unique, s'élève, au prix actuel du cuivre, à plus de 283,000 dollars; la communication exige les services de neuf personnes aux tableaux de distribution à divers points le long de la ligne.

"Plus le service téléphonique se développe, plus on en reconnait la nécessité et plus on en apprécie la valeur. En 1904, le nombre des téléphones a augmenté de 701,047, lesquels ont exigé 712,147 milles de fils de ligne et dont l'établissement a coûté 33,436,700 dollars. Ces chiffres représentent une augmentation de 20 pour cent, et portent le chiffre total des téléphones à 4,480,564 et les fils de ligne à une longueur de 4,671,038 milles."

Le Brésil vet des machines agricoles américaines

M. le consul général Seeger, de Rio de Janeiro (Brésil) fournit au Bureau des Manufactures, par l'intermédiaire du Département de l'Etat, deux lettres qui lui ont été écrites par des négociants brésiliens et lui demandant de leur fournir les noms de fabricants américains (des Etats-Unis) de machines agricoles et de fers de construction. Les lettres étaient confidentielles, et pour des raisons que comprendront les hommes d'affaire les noms des auteurs ne sont pas donnés. Voici la lettre émanant d'une maison d'outils agricoles et qui faisait ses achats dans des maisons anglaises:

"Il y a quelques mois, nous avons commandé, par l'intermédiaire d'une maison anglaise établie ici, plusieurs machines agricoles américaines. Nous en fûmes si pleinement satisfaits que nous avons fait de nouvelles commandes. Malheureusement, nous trouvons que les machines reçues sont de marque anglaise, qui copient exactement le type et le pro-laise, qui copient exactement le type et le procedé américain, mais n'en sont pas moins de qualité inférieure. Nous vous serions donc reconnaissants de vouloir bien nous fournir l'adresse de fabricants américains de charrues, cultivateurs, herses et autres outils, car nous avons l'intention d'importer ces articles directement à l'avenir afin d'éviter les imitations."

L'autre lettre, écrite par une maison de Rio représentant actuellement des industriels du fer en France et en Belgique, est conçue en ces termes:

"Comme nous savons que vous vous intéressez fort à la création de relations commerciales et industrielles entre les Etats-Unis d'Amérique et le Brésil, nous prenons la liberté de vous faire la proposition suivante que nous vous prions de vouloir bien prendre en considération:

"Nous représentons au Brésil plusieurs fabricants et fournisseurs de fer français et belges, et, comme vous le savez, tous les négociants en fer européens ont formé un syndicat de manière à pouvoir maintenir le prix de leurs produits. Il se peut qu'un nouveau compétiteur, qui ne serait pas lié par des engagements de ce genre et en état de faire concurrence aux industries européenes, ait maintenant une bonne occasion de mettre le pied sur le marché brésilien, surtout que plusieurs compagnies importantes nord-américaines se sont formées au Brésil il y a quelques mois. Pourquoi les Américains ne feraient-ils par ici ce qu'ils font avec succès en Europe?

"Nous vous serions fort obligés si vous pouviez nous mettre en relations avec une bonne fabrique d'acier, une usine de laminage de quelque importance et des fondeurs et constructeurs de fer capables de nous fournir des fers de construction: charpentes, ponts, etc. Nous sommes parfaitement sûrs que beaucoup d'industriels du fer et de l'acier nord-américains sont à même de travailler à aussi bon marché que leurs concurrents d'Europe et de donner les mêmes crédits. Vous êtes ici depuis assez longtemps pour vous êtes rendu compte de la rapide expansion du commerce allemand au Brésil et pour connaitre les moyens que les maisons allemandes ont employés pour attendre à la suprématie commerciale. Vous savez quelles facilités de payement les fabriques allemandes offrent à leurs clients. Il n'y a pas de raison pour que les négociants nord-américains ne puissent faire ce que d'autres font."

Les personnes désireuses de correspondre avec ces maisons peuvent obtenir leurs adresses en écrivant à M. Eugene Seeger, Consul-Général, Rio de Janeiro; ces adresses seront également fournies, sur demande, par le Bureau des Manufactures.

Le wagon d'acier et la sécurité des voyages

Si, comme l'indiquent les registres de l'Interstate Commerce Commission, les collisions et les déraillements sont les accidents qui blessent ou tuent le plus grand nombre de personnes sur nos chemins de fer; et si, comme cela semble malheureusement vrai, la direction de nos chemins de fer est incapable de réduire le nombre des accidents de ce genre; en d'autres termes, si, sous les conditions actuelles les déraillements et les collisions accompagnent inévitablement les voyages en chemins de fer, la meilleure chose que nous puissions peut-être faire serait donc de construire notre matériel roulant et surtout les wagons de voyageurs de telle façon qu'ils fussent à l'épreuve des collisions.

Le wagon d'acier est à l'épreuve des collisions.

Il y a quelques années une certaine compagnie se mit à construire des wagons de marchandises en acier, et, comme de juste, les premiers de ces wagons d'acier qui furent mis sur rails ne tardèrent pas à se trouver dans une collision expérimentale. Et ils prouvèrent d'emblée qu'ils pouvaient résister à des efforts qui auraient réduit en miettes des wagons en bois. Après une pareille collision, ce qui resta des wagons en bois fut brûlé sur place; mais les wagons en acier furent retirés des débris, ils furent remis sur leurs trucs et emmenés aux ateliers pour être un peu redressés.

Dans les fortes collisions, c'est le télescopage des wagons qui tue et blesse le plus de voyageurs; mais les wagons d'acier ne peuvent pas télescoper. Même avec la quantité de mouvement d'un très lourd train derrière lui, le wagon qui devait télescoper ne peut faire pénétrer se plate-forme dans les poteaux d'aicer verticaux (cornières, fers en U ou fers à T) qui forment le bâti du wagon. Suivant la ligne de la moindre résistance, les wagons d'acier, dans les collisions de ce genre, glisseront les uns à côté des autres, seront renversés et roulés à côté de la ligne. Dans ce ces, les blessures des voyageurs seront dues au fait qu'ils auront été violemment bousculés et se borneront le plus souvent à des coupures et à des contusions. Les wagons tout acier du "Subway" de New York et les wagons mixtes avec sous-bâti en acier ont probablement sauvé plus de vies et de membres que la compagnie ne voudrait admettre. Si les collisions qui ont déjà eu lieu s'étaient produites entre des wagons en bois ancien modèle, la liste des morts et blessés eût été beaucoup plus longue.

L'Interstate Commerce Commission a fait une œuvre splendide en obligeant les compagnies à employer l'accouplement automatique et le frein à air comprimé. L'heure peut ne pas être encore venue, mais elle vient où la même comité obligera nos compagnies de chemin de fer à faire usage du wagon d'acier. Il va sans dire qu'une transformation si considérable et si coûteuse ne peut se faire que graduellement: mais elle se fera, et probablement de la libre volonté des compagnies de chemins de fer qui apprécient de mieux en mieux l'importance de la sécurité des voyageurs et qui verront qu'en fin de compte il y a économie à employer les wagons d'acier qui peuvent durer bien plus longtemps que les wagons en bois.

Une nation de consommateurs

Le moment semble approcher où l'Amérique consommera tous les produits de la ferme et n'en laissera que fort peu ou point du tout pour l'exportation. Cela est vrai du blé et de la farine, dont la majeure partie se consomme aujourd'hui en Amérique. Depuis 1878, l'exportation annuelle du froment, y compris la farine comme froment, n'était, jusqu à l'année dernière, tombée au-dessous de 100 millions de boisseaux que deux fois, et même alors très peu au-dessous—1889 étant l'année la plus mauvaise, et 88,600,740 étant exportés cette année-là. La moyenne, pour toutes ces années était largement de 150 millions de boisseaux et, pour la plupart d'entre elles de 200 millions de boisseaux. Mais l'année dernière c'est à peine si 43,797,786 boisseaux sortirent du pays; quant à la farine, on n'en exportait que 7,945,786 tonneaux, tandis qu'en 1903 on en exportait 19,716,484 tonneaux; 17,795,203, en 1902, et 16,729,550, en 1904.

Selon le *Republican*, de Springfield, on se demande, et avec une anxiété inconnu depuis que les États-Unis sont devenus un facteur important dans l'alimentation de l'Europe occidentale, si cet état de choses va, oui ou non, durer longtemps. D'après les rapports du Département de l'agriculture, la récolte du blé, l'année dernière, bien que considérablement inférieure à celles des trois années précédentes, était un peu supérieure à celle des années 1900, 1899 ou 1897; et cependant, pour ces trois années, l'exportation du blé s'est élevée, pour chacune d'elles à plus de 200 millions de boisseaux, alors que, en dépit de la récolte plus considérable de 1904, on exporte moins de 44 millions de boisseaux.

Cela signifie que l'expansion rapide des manufactures a créé, pour les produits de la ferme, une demande nationale jusqu'alors inconnue dans l'histoire de la nation, et que, à mesure que les années s'écouleront, l'exportation de ces produits diminuera de plus en plus tandis que la consommation nationale augmentera. Et c'est pourquoi le marché national américain est le plus grand que le monde ait jamais connu. Avec une population grossissant à vue d'œil, grâce surtout au nombre colossal d'émigrants qui affluent sans cesse dans les ports du continent américain, les Etats-Unis seront bientôt incapables de produire plus d'articles d'alimention qu'il n'en faudra pour subvenir aux besoins de leurs habitants. Ce pays n'est plus surtout et avant tout un pays agricole; il est en train de devenir une grande nation industrielle, et donne ainsi aux agriculteurs, à leurs propres portes, un marché pour tout ce qu'ils peuvent produire.

Pour le commerce extérieur

En désignant des agents spéciaux qui auront pour mission d'étudier l'état du commerce dans les pays étrangers, en vue de l'extension du commerce américain, le Département du Commerce et du Travail a pris une initiative des plus heureuses. C'est à un vote du Congrès qu'il doit l'autorité de nommer ces agents, qui seront au nombre de cinq. La mesure entre en vigueur à partir du 1er juillet, et il est à présumer que les cinq agents se rendront à leurs postes respectifs peu de temps après cette date; mais, comme la somme mise de côté pour ce travail n'est que de 30,000 dollars, les champs d'investigation ont été limités. Néanmoins, deux agents se rendront en Orient, un autre est déjà à l'œuvre dans l'Amérique du Sud, un quatrième visitera le Canada et plus tard le Mexique ainsi que les pays de l'Amérique centrale, le cinquième enfin aura pour champ de recherches les Indes occidentales le Vénézuela et les Guyanes anglaise, hollandaise et française. Les rapports devront être présentés vers la fin de l'année. Les agents auront pour but de se rendre compte des relations commerciales avec les pays visités; de rechercher la part qui échoit aux États-Unis dans le commerce total de ces pays et les procédés propres à employer pour étendre davantage le commerce extérieur des Etats-Unis. Des instructions déterminant l'étendue du travail des agents ont été promulguées par le Département, mais des renseignements utiles seront les bienvenus, même s'il faut sortir des limites des instructions pour les obtenir.—*Bradstreet.*

Notre commerce d'exportation

Les statistiques compilées par le Département du Commerce du travail montrent que l'exportation des produits manufacturés, au cours de l'année qui vient de s'écouler, a atteint le chiffre de 543,620,297 dollars, tandis qu'en 1904 elle n'était que de 452,415,921 dollars: elle a donc augmenté de 91 millions de dollars environ.

Les exportations des produits manufacturés sont non seulement les plus considérables qui aient jamais été enregistrées, mais elles vont même jusqu'à dépasser l'ensemble de l'exportation totale de l'année du centenaire, 1876, et dépassent de près de 140 millions de dollars la somme totale des importations et des exportations du pays à la fin de la Guerre civile.

L'augmentation de l'exportation des produits manufacturés est bien supérieure à l'augmentation de la population. Sur 30 articles importants, il n'y en a que sept qui se soient moins exportés qu'en 1904.

Les produits en fer et en acier constituent environ le quart des exportations totales; ils ont atteint la somme de 134,727,921 dollars, en 1904, ils ne s'élevaient qu'à 111,948,586 dollars. L'exportation des rails d'acier a augmenté de 6 millions de dollars.

Détail intéressant, 151 locomotives ont été expédiées au Japon en 1905, tandis qu'on n'en avait expédié que 74 en 1904. Le Japon a également augmenté ses achats de machines à électricité et de quincaillerie pour constructeurs. Les produits de cuivre viennent en second lieu: l'exportation a atteint le chiffre de 86,225,291 dollars en 1905. Elle n'était que de 57,142,081 en 1904.

L'importation des huiles minérales—cet article est le troisième en importance—a augmenté de plus de 100 millions de gallons; mais par suite d'une baisse dans les prix, la valeur de l'exportation est restée pour ainsi dire la même. L'exportation du pétrole, en 1905, a été de 951 millions de gallons: elle était de 847 millions en 1904. La valeur de ce produit exporté en 1905 est de 71,888,317 dollars; elle était de 71,753,552 dollars en 1904. On en a expédié 221 milions de gallons en Grande Bretagne et en Irlande, 147 millions en Allemagne, et 117 millions aux Pays-Bas. On n'en a exporté que 55 millions de gallons dans l'Amérique du Sud.

L'exportation des catonnades a augmenté d'une manière frappante: d'une valeur de 22,403,713 dollars en 1904, elle s'élevait à 49,666,080 en 1905. La Chime en a reçu environ 400 millions de "yards" de plus que l'année dernière où elle n'en reçut que 76 millions 9 dixièmes. La valeur de l'exportation de nos cotonnades dans ce pays était de 4 millions de dollars en 1904, et s'élevait à 27,750,000 dollars en 1905. Le Japon est le seul autre pays qui ait importé une considérable quantité de nos cotonnades: nous lui en avons envoyé 16 millions de "yards," alors que nous ne lui en expédiâmes que 440,000 yards en 1904.

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La Gran Bretaña puede reclamar el honor de haber originado la marca postal. La primera que se usó en Londres en 1660 era muy sencilla: consistia en un circulo dividido en dos partes. En la parter de arriba habia dos letras, que indicaban el mes, y en la mitad de abajo el dia del mes. No se trató de denotar el año.

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El Brazil Necesita los Instrumentos Agrícolas Americanos

El Consul-General Seeges de Rio Janeiro, le remite al "Bureau of Manufacturas" por conducto del Departamento de Estado, dos cartas que le escribieron los comerciantes brasileños suplicándole que les diese los nombres de fabricantes de instrumentos agrícolas y hierro de construcción de los Estados Unidos. Esas cartas son confidenciales, y por razones que comprenderan los hombres de negocios, se reservan los nombres de los que las escribieron. La carta de la casa que se ocupa en el negocio de instrumentos agrícolas, y que ha estado haciendo sus compras á las fabricas inglesas, es del tenor siguiente:

"Hace pocos meses hicimos, por conducto de una casa inglesa establecida aqui, un pedido de máquinas americanas para trabajos agrícolas, y quedamos tan complacidos con ellas, que inmediatamente hicimos un nuevo pedido. Desgraciadamente hemos descubierto que las máquinas recibidas son de manufactura inglesa, y una copia exacta del tipo y sistema americanos, pero de inferior calidad. De consiguiente le agradeceremos infinito nos suministre las direcciones de fábricas americanas de arados, cultivadoras, rastras y otros instrumentos, porque pensamos importar directamente semejantes artículos en lo futuro, con el fin de evitar las imitaciones."

La otra carta, escrita por una casa que actualmente representa á los contratistas y arquitectos de Francia y Belgica, es como sigue:

"Como sabemos que Ud. se toma gran interés por el fomento de las relaciones comerciales é industriales entre los Estados Unidos de América y el Brazil, nos tomamos la libertad de hacerle la siguiente proposición que nos alegraríamos tomase Ud. en consideración.

Nosotros somos los representantes en el Brazil de varios contratistas de hierro de construcción y arquitectos de Francia y Bélgica, y, como Ud. sabe, todos los negociantes en hierro de Europa han formado un Sindicato para mantener los precios de sus productos. Puede ser esta una buena oportunidad para que un nuevo competidor sin compromiso, y en posición de poder competir con la industria europea, entre en el mercado, particularmente en vista del hecho que hace pocos meses se han formado en el Brazil varias importantes compañias norte-americanas. ¿Por qué no podrian hacer aqui los americanos lo que con tan buen éxito han hecho en Europa?

"Le quedariamos muy agradecidos si

Notre commerce d'exportation

Les statistiques compilées par le Département du Commerce du travail montrent que l'exportation des produits manufacturés, au cours de l'année qui vient de s'écouler, a atteint le chiffre de 543,620,297 dollars, tandis qu'en 1904 elle n'était que de 452,415,921 dollars; elle a donc augmenté de 91 millions de dollars environ.

Les exportations des produits manufacturés sont non seulement les plus considérables qui aient jamais été enregistrées, mais elles vont même jusqu'à dépasser l'ensemble de l'exportation totale de l'année du centenaire, 1876, et dépassent de près de 140 millions de dollars la somme totale des importations et des exportations du pays à la fin de la Guerre civile.

L'augmentation de l'exportation des produits manufacturés est bien supérieure à l'augmentation de la population. Sur 30 articles importants, il n'y en a que sept qui se soient moins exportés qu'en 1904.

Les produits en fer et en acier constituent environ le quart des exportations totales; ils ont atteint la somme de 134,727,921 dollars, en 1904, ils ne s'élevaient qu'à 111,948,586 dollars. L'exportation des rails d'acier a augmenté de 6 millions de dollars.

Détail intéressant, 151 locomotives ont été expédiées au Japon en 1905, tandis qu'on n'en avait expédié que 74 en 1904. Le Japon a également augmenté ses achats de machines à électricité et de quincaillerie pour constructeurs. Les produits de cuivre viennent en second lieu: l'exportation a atteint le chiffre de 86,225,291 dollars en 1905. Elle n'était que de 57,142,081 en 1904.

L'importation des huiles minérales—cet article est le troisième en importance—a augmenté de plus de 100 millions de gallons; mais par suite d'une baisse dans les prix, la valeur de l'exportation est restée pour ainsi dire la même. L'exportation du pétrole, en 1905, a été de 951 millions de gallons; elle était de 847 millions en 1904. La valeur de ce produit exporté en 1905 est de 71,888,317 dollars; elle était de 71,753,552 dollars en 1904. On en a expédié 221 milions de gallons en Grande Bretagne et en Irlande, 147 millions en Allemagne, et 117 millions aux Pays-Bas. On n'en a exporté que 55 millions de gallons dans l'Amérique du Sud.

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El Brazil Necesita los Instrumentos Agrícolas Americanos

El Consul-General Seeges de Rido Janeiro, le remite al "Bureau of Manufacturas" por conducto del Departamento de Estado, dos cartas que le escribieron los comerciantes brasileños suplicándole que les diese los nombres de fabricantes de instrumentos agricolas y hierro de construcción de los Estados Unidos. Esas cartas son confidenciales, y por razones que comprenderán los hombres de negocios, se reservan los nombres de los que las escribieron. La carta de la casa que se ocupa en el negocio de instrumentos agricolas, y que ha estado haciendo sus compras á las fábricas inglesas, es del tenor siguiente:

"Hace pocos meses hicimos, por conducto de una casa inglesa establecida aqui, un pedido de máquinas americanas para trabajos agrícolas, y quedamos tan complacidos con ellas, que inmediatamente hicimos un nuevo pedido. Desgraciadamente hemos descubierto que las máquinas recibidas son de manufactura inglesa, y una copia exacta del tipo y sistema americanos, pero de inferior calidad. De consiguiente le agradeceremos infinito nos suministre las direcciones de fábricas americanas de arados, cultivadoras, rastras y otros instrumentos, porque pensamos importar directamente semejantes articulos en lo futuro, con el fin de evitar las imitaciones."

La otra carta, escrita por una casa que actualmente representa á los contratistas y arquitectos de Francia y Bélgica, es como sigue:

"Como sabemos que Ud. se toma gran interés por el fomento de las relaciones comerciales é industriales entre los Estados Unidos de América y el Brazil, nos tomamos la libertad de hacerle la siguiente proposición que nos alegrariamos tomase Ud. en consideración.

Nosotros somos los representantes en el Brazil de varios contratistas de hierro de construcción y arquitectos de Francia y Bélgica, y, como Ud. sabe, todos los negociantes en hierro de Europa han formado un Sindicato para mantener los precious de sus productos. Puede ser esta una buena oportunidad para que un nuevo competidor sin compromiso, y en posición de poder competir con la industria europea, entre en el mercado, particularmente en vista del hecho que hace pocos meses se han formado en el Brazil varias importantes compañias norte-americanas. ¿Por qué no podrían hacer aqui los americanos lo que con tan buen éxito han hecho en Europa?

"Le quedariamos muy agradecidos si

INTENTIONAL SECOND EXPOSURE

pudiese Ud. ponernos en communicación con alguna gran fábrica de acero, casa laminadora é importante fundición de hierro y constructora que pueda suministrarnos armazones de hierro, puentes, etc. Estamos muy seguros de que muchos fabricantes de hierro y acero están en posición de producir obras tan baratas como cualesquiera competidores europeos, y de conceder los mismos créditos. Ud. ha estado aqui bastante tiempo para ser testigo del desarrollo del comercio alemán en el Brazil, y para enterarse de los medios empleados por sus casas para adquirir la supremacia comercial. Ud. conoce las grandes facilidades para los pagos que ofrecen á su parroquianos las fábricas alemanas. No hay razones para que los comerciantes norte-americanos no hagan lo que hacen otros.

"Los que deseen comuncarse con esas casas pueden obtener sus direcciones escribiéndole á Eugene Seeges, Consul-General en Rio Janeiro ó dirigiéndose al "Bureau de Manufacturas.

Una Nación de Consumidores

Los Estados Unidos se van acercando rápidamente á aquel punto en que consumirán todos los productos agrícolas de sus tierras, dejando muy poco ó nada para la exportación. Esto es una verdad con respecto al trigo y á la harina, consumiéndose hoy ya en el pais el gran volumen de estos productos. Desde 1878 la exportación anual del trigo, incluyendo la harina como trigo, habia, hasta el año pasado, bajado solamente dos veces de 100.000,000 de "bushels," y entonces la diminución no fué grande, siendo 88.600.740 "bushels" la exportación de 1889, mientras que la exportación de cada uno de esos años llegó, por término medio, á 150.000,000 de "bushels," y en la mayor parte de ellos á 200.000,000 de "bushels." Pero en el último año fiscal sólo 43.707,786 "bushels" salieron del país, y solamente 7.975.786 barriles de harina, comparados con 19.716,484 en 1903; 17.795.203 en 1902, and 16.729.550 en 1904.

Según el *Springfield Republican* se ha suscitado en la forma más acalorado desde que los Estados Unidos formaron un importante factor en la alimentación de la Europa occidental la cuestión de si continuará siendolo ó no este país. Según los datos allegados por el Departamento de Agricultura, la cosecha de trigo del país el año pasado, aunque considerablemente menor que las de los tres años precedentes, fué algo mayor que la de los años de 1900, 1899 ó 1897, y sin embargo en cada uno de esos años ascendió la exportación á más de 200.000,000 de "bushels, mientras que de la cosecha más abundante de 1904 menos de 44.000,000 de "bushels" se exportaron.

Esto significa que el rápido aumento de nuestra industria fabril ha creado una demanda en el país para los productos de las haciendas de campo sin, precedente en la historia de la nación, y á medida que vayan transcurriendo los años irá disminuyendo la exportación de nuestros cereales y aumentando su consumo en el mismo país. Esta es la razón por la cual el mercado nacional americano es el más grande que jamás ha conocido el mundo. Con el asombroso aumento de la población, al cual está contribuyendo una inmigración sin precedente, pronto aparecerá que la producción de cereales no será más que la necesaria para el consumo del país. Esta nación no es ya principalmente agrícola, pues camina rápidamente en otra dirección, la de llegar á ser una gran nación manufacturera, proporcionándoles asi á sus hacendados un provechoso mercado á sus mismas puertas para todo cuanto puedan producir con la labranza de sus tierras.

La Segunda Ciudad del Mundo

Los guarismos del incompleto censo indican que la población de la ciudad de Nueva York es muy poco menos de 4.000.000, ó, para ser exactos, contiene esa ciudad 3.987.154 habitantes. Las probabilities son que sólo Manhattan y el Bronx se hallará que contienen 2.378,606 almas. Es un estudio interesante remontarnos al pasado y comparar la población de Nueva York en los sucesivos periodos de su crecimiento con la de hoy. El primer censo federal hecho en 1790 acusó una población de 33.313. En 1800 había subido á 60.515, y en 1810 á 96.373. Durante los veinte años siguientes llegó á más del doble esa población, siendo 202.589 en 1830. A mediados del siglo había pasado de medio millón. Treinta años después, en 1880, volvió á pasar del duplo esa población elevándose á 1.206,293. De 1900 á 1905 creció la población de 3.437,000 á 3.987,154, ó á razón de 100,000 al año. El rango de Nueva York entre las grandes ciudades del mundo se muestra asi: Londres ocupa el primero con 4.536,642. Siguele Nueva York, y después Paris con 2.714.008 almas; luégo Berlin con 1.888,848, y Chicago con 1.698,575. A ésta le siguen en el orden dado Viena, Canton, Tokio y Filadelfia, todas las cuales contienen más de un millón, teniendo la última mencionada 1.293,697, según el censo de 1900.

Con respecto á la posibilidad de que llegue Nueva York á ser la ciudad más grande del mundo, nada indica que Londres llegue á perder el primer lugar por muchas décadas venideras, pues dentro de los límites de la policía metropolitana contiene esa ciudad una población de 6.581,372 habitantes, siendo ésta la población de la que podría llamarse el Londres Máximo. Para expresarlo de otro modo: el "Manhattan" de Londres contiene 4.613.812 contra 2.127,602 en el Manhattan de Nueva York; mientras que Londres Mayor contiene 6.581,372; la población de Greater New York no llega á 4.000,000. Nueva York, sin embargo, crece con mayor rapidez que Londres, y si continúa creciendo su población al mismo paso, es sólo questión de tiempo que llegue el dia en que se hallará la ciudad más grande del mundo en el Hemisferio Occidental.

Los Americanos en la China

Bajo una concesión imperial está la "American China Development Co." construyendo una vía ferrea que partirá de Canton en el Sur á Hankow en el río Yangtse-kiang, una distancia de unas 800 millas. Esa compañía completó recientemente una linea de 29 millas de Canton á Samshui. El día fijado para las ceremonias de su apertura, entre el estrépito de los silvatos, campanas, tom-toms y fuegos artificiales, abordaron el primer tren que recorrió la linea los cónsules extranjeros, los empleados del Gobierno chino y una multitud de amigos de la empresa, inaugurando asi la nueva era de progreso y prosperidad en que ha entrado el gran Imperio. Los chinos que se han puesto en contacto con los extranjeros y experimentado los beneficios de las instituciones modernas miran con buenos ojos la innovación realizada en la construcción de ese ferrocarril, y desde el principio han patrocinado la linea en operación, lo que augura el buen éxito financiero que tendrá al completarse la linea troncal de China. La linea ferrea de 11 millas que llega á Fat Shan está conduciendo diariamente desde el amanecer hasta el anochecer más de 4,000 pasajeros, lo que puede considerarse como un maravilloso principio. El apeo de la linea hasta Hankow comunica con las partes más ricas y productivas del Imperio, y por la absoluta seguridad que ofrece á los embarcadores de mercancías, será una bendición, no sólo para todas las clases comerciales, del país, sino también una fuente de utilidades para los accionistas de esa intrépida empresa.

El Arado Americano como Misionero en el Extranjero

!Cuán pocos comprenden el influjo que tienen y pueden ejercer sobre las condiciones que los rodean, ó las de otras comunidades ó paises!

No son solamente los que ejercen los más altos empleos, ó los que ocupan la atención general del público los que hacen mayor bien á la presente ó á las futuras generaciones.

¿Quién le hubiera dicho á Mr. J. R. Bucher, el primer fundador, cuando, en 1830, (hace tres-cuartos de siglo) empezó á fabricar lo que era entonces la principal serie de arados, conocidos hoy con el nombre de "Imperial," que en el porvenir el fruto de su industria llegaría á ser usado por todas las naciones de la tierra?

No sólo ha hecho crecer dos hojas de yerba donde no crecía sino una antes, sino que le ha llevado la industria y la civilización á miles de personas en muchos países.

Millones de pesos invierten anualmente las Sociedades misioneras combinadas de este país en enviar misioneros á países extranjeros, pero el misionero más grande entre ellos ha sido el "Arado Americano."

Este misionero no tiene credo que exponer, ni doctrina que enseñar, asi es que no tiene que vencer preocupaciones religiosas; pero llevó consigo la venturosa noticia de "paz y abundancia," á todo el que hiciese uso de su mágico poder para sacarle á la Madre Tierra sus frutos de bendición para el género humano.

Contemplad el semblante de ese campesino labrador con su cayado, su primitivo arado y su asno, desalentado, desesperanzado. Hasta sus hijos muestran los efectos de su miserable condición. Algunos años después vemos á su hijo mayor y su hermano más joven, con una yunta de bueyes y un caballo usando dos arados "Imperial" en la misma finca de Tunez. Nótese el cambio de su respectiva apariencia y de las condiciones que los rodean, y digasenos si el arado ha sido un misionero ó no.

Los arados, rastras y cultivadoras de la marca "Imperial" han llegado á hacerse tan populares en muchos países, que toda la familia sale á ver estos nuevos instrumentos á su llegada y luégo á ver con qué facilidad y perfección hacen sus trabajos.

Todas las nacionalidades, todas las religiones, todos los pueblos les dan la bienvenida, sin pheocupaciones, sin suspicacia, y se benefician con ellos. El mismo Marqués de Dufferin comprende su valor y los aprecia.

La marca "Imperial" sale al encuentro y vence todos los obstáculos, satisfaciendo asi todos los requerimientos del hacendado ó labrador, desde el trabajo de romper el terreno virgen hasta el más esmerado cultivo de la huerta de un rey. Cuando nosotros los de la época presente vemos esos resultados del ingenio y de la laboriosidad de esos fundadores que han pasado á mejor vida, ¿quién puede decir que "no están con nosotros?"

Desde la humilde fragua en la encrucijada, donde Mr. Joshua Gibbs acostumbraba herrar los caballos de sus vecinos y fabricar sus arados con vertedera de madera en 1830, hasta la gran fábrica de nuestros dias, provista de los más perfeccionados aparatos y maquinaria economizadora de tiempo y de trabajo, ha sido tan notable el continuo desarrollo de este ramo de la industria fabril, que raramento se ha igualado en otros ramos. Algunos de sus empleados actuales han estado en esa fábrica un gran número de años, lo que prueba más que nada las buenas y leales relaciones entre los dueños y sus obreros.

Hace unos doce años que, previendo las oportunidades que ofrece el comercio con el extranjero, establecieron una oficina en B 17-21 "Produce Exchange," New York, U. S. A., para atender á sus negocios con el exterior, y desde entonces han estado enviando agentes viajeros á casi todos los países civilizados del mundo para estudiar las necesidades de cada uno é introducir alli sus productos.

Han hecho una especialidad del estudio de las necesidades de un mercado para fabricar un instrumento ó apero adaptado á esos requerimientos, pero sin copiar nunca los anticuados modelos hallados en el respectivo país. Su divisa ha sido siempre: "*Algo mejor para el mismo objeto.*"

Se puede obtener, solicitándolo, su Catálogo No. 104.

El café fué descubierto en 1285 por un derviche llamado Hadji Omar; habiéndose perdido en un desierto de Arabia, estaba muriéndose de hambre, cuando encontró algunas bayas redondas y pequeñas, pero al tratar de comerlas las halló tan amargas que se disgustó. Luégo trató de asarlas, y finalmente asi asadas ó tostadas las maceró en agua. Naturalmente el resultado fué nuestro café, y aunque no de la mejor calidad, tan agradable lo halló Hadji Omar, que tan pronto como halló su camino á su pueblo introdujo el uso de esa bebida entre los hombres sabios, y tan complacidos se sintieron que proclamaron como santo á aquel derviche.

El Singular Testamento de un Inventor

Alfred B. Nobel el inventor de la nitroglicerina y la dinamita murió en 1890, dejando una fortuna que se calcula en $10.000,000. Toda esa fortuna se la legó á la causa de la ciencia, y de conformidad con las cláusulas del testamento sólo el rédito de ese capital se podrá usar, habiéndose dividido dicho rédito en cinco partes iguales. Una de esas partes se le adjudicará al hombre que haga el más importante descubrimiento en la quimica; otra parte al que haga el más importante descubrimiento en la fisiología ó la medicina; otra al que produzca el libro más notable de naturaleza idealística, y la quinta parte al que haga el mejor trabajo en pro de la fraternidad de las naciones, la supresión ó reducción de los ejércitos permanentes, y la propaganda de los congresos de la paz. Esos premios se adjudicarán sin atender á la nacionalidad de los beneficiados, pues Nobel mismo era un cosmopolita que había vivido en muchos países diferentes. Los amigos del miembro del Congreso, Bartholdt, de San Luis, Mo., han resuelto reclamar para ese estadista el premio asignado por la última cláusula del testamento de Nobel. Los merecimientos de Mr. Bartholdt se fundan en sus trabajos ó gestiones en favor del Congreso Interparlamentario que se celebró en San Luis el verano pasado. Por las gestiones de Mr. Bartholdt apeló ese Congreso al Presidente Roosevelt, suplicándole que convocase de nuevo la Conferencia de La Hague ó La Haya. Si Mr. Bartholdt obtiene ese premio, recibirá la bonita suma de $35,000.

Exposicion de Automoviles

El Club de Automóviles de América celebrará su sexta Exhibición Anual de Automóviles y su accesorios en Nueva York en Enero de 1906. Tendrá lugar en la Armería (cuartel) del Regimiento Sesenta y Nueve, situado en las calles 25, 26 y la avenida Lexington. Una de las cosas más interesantes de la Exposición serán las exhibiciones especiales del Club, formadas de automóviles de todas partes del mundo.

Exportaciones de Nueva York

Las importaciones de mercancias por el puerto de Nueva York durante el año importaron $684.407,042 contra $600.170,033 el año pasado: excedieron en unos $600.000,000 las de cualquier otro año anterior. Las exportaciones de mercancías del país se valoran en $506.448,437 contra $493.698,208, incluyendo las mercancías extranjeras por valor de $13,491,315 contra $13.102,304 el año anterior.

Los Instrumentos Agrícolas en Rusia

Los manufactureros americanos han monopolizado prácticamente el comercio en máquinas é instrumentos agrícolas de alto grado de excelencia, debido esto á los bien dispuestos que han estado á adaptar sus máquinas y aperos de labranza á los requerimientos de cada país, y al acierto con que escojen sus agentes. Por ejemplo, un excelente representante de nuestros instrumentos agrícolas recientemente, á su costa, hizo imprimir un catálogo en lenguaje sencillo, claro y adecuado para su distribución entre los campesinos, adaptándolo á sus necesidades. Dió ese paso en vista del hecho de que hoy es el campesino el mejor parroquiano del comerciante. El paga al contado, y con la constante división y subdivisión de las tierras, constituye una clase en crecimiento constante y con necesidades que haría bien en observar el manufactureo americano. La fabricación de máquinas agrícolas, para satisfacer los requerimientos del hacendado en pequeña escala es una industria que promete mucho; asi, por ejemplo, unas sembradoras de mano para 5 hileras de plantas llenaría un vacío, y se vendería con rapidez, donde las grandes sembradoras seriian demasiado costosas y demasiado grandes para el campesino en pequeño.

La mayor parte de las separadoras de crema en uso aquí son de fabricación danesa ó sueca; pero si fuesen menos costosas las máquinas americanas de esta clase, podrían competir con buen éxito en este mercado, donde las ventas han aumentado últimamente de un modo notable.

La cuestion del crédito aquí, aunque difícil para la generalidad de los manufactureros americanos, la podrían resolver en gran manera nombrando buenos agentes; sin embargo, la acostumbrada exijencia de largos plazos por parte de los compradores, especialmente para la introducción de nuevos artículos, es un gran obstáculo para muchos. Una firma ó casa que piense seriamente en introducir su mercancía en un mercado, debería investigar primero las condiciones usuales de hacer negocios en este ramo en el país á que pertenece ese mercado, comparando al mismo tiempo la calidad y los precios de sus productos con los de los artículos del mismo género vendidos en dicho mercado. Luégo, si el resultado de semejante investigación justifica la creencia en un buen éxito, se debería emplear el mejor agente que se pueda hallar, apoyándolo en todo, aunque haya que modificar algunas de las condiciones usuales. La experiencia de los fabricantes de instrumentos agrícolas aquí y su evidente buen éxito prueban que el beneficio obtenido justifica el gasto de tiempo y dinero.—*El Cónsul de los E. U. Slocum en Varsovia, Rusia.*

El Dinero del Mundo

Una mirada á la reciente declaración del Secretaria de Hacienda Shaw, en que se calcula el valor de las monedas extranjeras, nos informa que un gran número de unidades monetarias tienen un valor de 19 centavos, sugiriéndonos la idea de que si las naciones del mundo llegasen á adoptar un tipo de moneda universal, se podría convenir sin mucha dificultad en fijar una moneda de ese valor aproximado como unidad monetaria. Se podría rebajar un poco el valor de nuestro peso para que equivaliese á cinco de esas monedas. El franco de Francia, de Bélgica y de Suiza, el marco de Finlandia, el dracma de Grecia, la lira de Italia, la peseta de España, y el bolivar de Venezuela, se cotizan todas al mismo valor de 19 centavos y 3 milésimas de peso; pero no son éstas las únicas monedas de un valor aproximado. La corona de Austria-Hungría vale 20 centavos y 3 milésimas; la corona de Noruega, Suecia y Dinamarca, $0.268; el marco alemán, $0.238; el chelín británico vale hoy—$0.24335.

El tael de los chinos es la moneda que más dificultades ofrece, porque su valor varía en diferentes partes de ese Imperio de 66 á 73 centavos. El tael de Haikwan, el más comúnmente aludido en las tablas estadísticas, vale $0.732;; mientras que en Fuchan el tael vale $0.665: en Shanghai, $0.657; y en Tientsin $0.697. El Secretario Shaw observa que en los paises donde rige el tipo de la plata se evalúan las monedas de ese metal por la cantidad de plata pura que contienen de conformidad con el promedio de las cotizaciones de la plata en el mercado durante los tres meses que preceden. El peso de plata mexicano, que hoy vale $0.477, valdrá, por un nuevo arreglo, $0.4.98 despúes del primero de Mayo; el peso britanico en Hongkong and Labuan tiene el mismo valor legal que el peso mexicano.

Varios países tienen una moneda que vale muy poco más que nuestro peso. El peso de Uruguay vale 3 centavos más que el nuestro; el milrei de Portugal 8 centavos más, y el peso de Terranova 1 centavo y 4 millésimas más que el nuestro.

El proyecto de adoptar una moneda universal, en favor del cual escribió Jefferson con tanto entusiasmo hace un siglo, no parece estar adelantando mucho en la actualidad. Charles W. Stone, de Pennsylvania, que hace algunos años fué presidente del Comité de la Cámara sobre monedas, pesas y medidas, preparó un comprensivo informe sobre este asunto. Fácil es comentar sobre sus ventajas; pero el sentimiento nacional se mueve my lentamente, aunque cuando llega á moverse algo parece ser siempre hacia la uniformidad.

Fomenta el Comercio con el Extranjero

Al nombrar agentes especiales para investigar las condiciones del comercio de los paises extranjeros, con el fin de fomentar el comercio americano, el Departamento de Comercio y Trabajos ha dado un paso acertado. Un acuerdo del Congreso autorizó al Departamento de Comercio para que hiciese esos nombramientos, que son cinco. Esa medida se lleva á cabo el primero de Julio, y se espera que poco después partirán esos agentes para cumplir con sus respectivas misiones, pero como el crédito acordado para esa empresa no es más que de $30,000 se ha tenido que limitar el campo de sus investigaciones. Sin embargo, dos agentes irán al Oriente, uno ha empezado ya sus trabajos en Sud América, otro se destina al Canadá primero, y luégo á México y Centro América, mientras que el quinto irá á las Antillas, Venezuela y las Guayanas Británica, Francesa y Holandesa. Deberán presentar sus respectivos informes al terminar el presente año. La obra de esos agentes es investigar el estado de las relaciones comerciales de esos países con el nuestro, para descubrir qué proporción de sus negocios mercantiles les corresponde á los Estados Unidos, y qué métodos hay que adoptar para aumentar dichas relaciones comerciales. El Departamento ha promulgado las instrucciones dadas á esos agentes definiendo el alcance de sus trabajos; pero se necesitan informes útiles, aunque tengan que traspasar los límites de dichas instrucciones.—*Bradstreet's.*

Joseph Gillot, un joyero inglés, inventó la pluma de acero. Un día se le rajó casualmente la punta de uno de sus más finos instrumentos de acero usados para fabricar las joyas, y malhumorado lo arrojó al suelo. Una hora después tuvo que escribir una carta; pero no pudo hallar su pluma de ave por más que lo registró todo buscándola. Mirando al suelo vió el instrumentito rajado; lo cojió, trató de escribir con él, y logró hacerlo satisfactoriamente. Desde entonces empezó á fabricar las plumas de acero.

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Im Firmenverzeichnis für Käufer das im ersten Theil dieses Blattes wiedergegeben ist, werden unsere geehrten Leser die betreffenden Waarenartikel in deutscher Sprache wiedergegeben finden. Es geschieht dies um ihnen die Möglichkeit zu geben, mit unseren Inserenten leichter korrespondiren zu können.

Die sechs Millionen Einwohner von Thibet müssen eine Armee von 430.000 Priestern unterstützen die weiter nichts zu thun haben, als schön illustrirte Exemplare heiliger Schriften zu vervielfältigen. Genannte Priester bekleiden auch alle öffentlichen Aemter.

Die Zahl aller an den Eisenbahnwegen der Welt befindlichen Querbalken wird auf ungefähr 1.494.000.000 veranschlagt und deren Werth auf fast 900 Millionen Dollar berechnet. Dieser Posten bildet eine gar ungeheuere Abzugsquelle in der Holzlieferung der Welt.

Der Mönch Roger Bacon soll der erste Brillenanfertiger, und zwar, im Jahre 1280 gewesen sein. An einer Grabschrift in Florenz jedoch, datirt 1290, ist zu ersehen, dass diese Ehre einem anderen Manne gebühre. Die Inschrift lautet: "Hier ruht Salvino degli Aramati, Erfinder der Brillen. Möge Gott ihm diese Sünde vergeben." Im sechzehnten Jahrhundert wurden in Holland und in Deutschland die Brillen allgemein.

Die Bevölkerung Indiens ist ungefähr viermal so gross wie die der Vereinigten Staaten, während die letzteren ungefähr die doppelte Flächenausdehnung hat. Der grösste Theil der Bevölkerung ist mit der Landwirthschaft dort beschäftigt. Jeder Einzelne miethet gewöhnlich nur einige Morgen Landes. Allerdings giebt es auch hier und da eine grössere Plantage die von einem reichen Manne oder Rajah betrieben wird, doch diese Fälle gehören mehr zur Ausnahme.

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Los Instrumentos Agrícolas en Rusia

Los manufactureros americanos han monopolizado practicamente el comercio en máquinas e instrumentos agrícolas de alto grado de excelencia debido esto á los bien dispuestos que han estado á adaptar sus máquinas y aperos de labranza á los requerimientos de cada país, y al acierto con que escojen sus agentes. Por ejemplo, un excelente representante de nuestros instrumentos agrícolas recientemente, á su costa, hizo imprimir un catálogo en lenguaje sencillo, claro y adecuado para su distribución entre los campesinos, adaptandolo á sus necesidades. Dió ese paso en vista del hecho de que hoy es el campesino el mejor parroquiano del comerciante. El paga al contado, y con la constante división y subdivisión de las tierras, constituye una clase en crecimiento constante y con necesidades que haria bien en observar el manufactureo americano. La fabricación de máquinas agricolas, para satisfacer los requerimientos del hacendado en pequeña escala es una industria que promete mucho; asi, por ejemplo, unas sembradoras de mano para 5 hileras de plantas llenaría un vacio, y se venderia con rapidez, donde las grandes sembradoras seriian demasiado costosas y demasiado grandes para el campesino en pequeño.

La mayor parte de las separadoras de crema en uso aqui son de fabricación danesa ó sueca; pero si fuesen menos costosas las máqainas americanas de esta clase, podrian competir con buen éxito en este mercado, donde las ventas han aumentado últimamente de un modo notable.

La cuestion del crédito aqui, aunque dificil para la generalidad de los manufactureros americanos, la podrian resolver en gran manera nombrando buenos agentes; sin embargo, la acostumbrada exijencia de largos plazos por parte de los compradores, especialmente para la introducción de nuevos articulos, es un gran obstáculo para muchos. Una firma ó casa que piense seriamente en introducir su mercancia en un mercado, deberia investigar primero las condiciones usuales de hacer negocios en este ramo en el país á que pertenece ese mercado, comparando al mismo tiempo la calidad y los precios de sus productos con los de los articulos del mismo género vendidos en dicho mercado. Luégo, si el resultado de semejante investigación justifica la creencia en un buen éxito, se deberia emplear el mejor agente que se pueda hallar, apoyandolo en todo, aunque haya que modificar algunas de las condiciones usuales. La experiencia de los fabricantes de instrumentos agricolas aqui y su evidente buen éxito prueban que el beneficio obtenido justifica el gasto de tiempo y dinero.—*El Cónsul de los E. U. Slocum en Varsovia, Rusia.*

El Dinero del Mundo

Una mirada á la reciente declaración del Secretaria de Hacienda Shaw, en que se calcula el valor de las monedas extranjeras, nos informa que un gran número de unidades monetarias tienen un valor de 19 centavos, sugiriéndonos la idea de que si las naciones del mundo llegasen á adoptar un tipo de moneda universal, se podría convenir sin mucha dificultad en fijar una moneda de ese valor aproximado como unidad monetaria. Se podria rehajar un poco el valor de nuestro peso para que equivaliese á cinco de esas monedas. El franco de Francia, de Bélgica y de Suiza, el marco de Finlandia, el dracma de Grecia, la lira de Italia, la peseta de España, y el bolivar de Venezuela, se cotizan todas al mismo valor de 19 centavos y 3 milésimas de peso; pero no son éstas las únicas monedas de un valor aproximado. La corona de Austria-Hungria vale 20 centavos y 3 milésimas; la corona de Noruega, Suecia y Dinamarca, $0.268; el marco alemán, $0.238; el chelín británico vale hoy—$0.24335.

El tael de los chinos es la moneda que más dificultades ofrece, porque su valor varía en diferentes partes de ese Imperio de 66 á 73 centavos. El tael de Haikwan, el más comúnmente aludido en las tablas estadisticas, vale $0.732; mientras que en Fuchan el tael vale $0.665; en Shanghai, $0.657; y en Tientsin $0.697. El Secretario Shaw observa que en los paises donde rige el tipo de la plata se evalúan las monedas de ese metal por la cantidad de plata pura que contienen de conformidad con el promedio de las cotizaciones de la plata en el mercado durante los tres meses que preceden. El peso de plata mexicano, que hoy vale $0.477, valdrá, por un nuevo arreglo, $0.498 despúes del primero de Mayo; el peso britanico en Hongkong and Labuan tiene el mismo valor legal que el peso mexicano.

Varios paises tienen una moneda que vale muy poco más que nuestro peso. El peso de Uruguay vale 3 centavos más que el nuestro; el milrei de Portugal 8 centavos más, y el peso de Terranova 1 centavo y 4 millésimas más que el nuestro.

El proyecto de adoptar una moneda universal, en favor del cual escribió Jefferson con tanto entusiasmo hace un siglo, no parece estar adelantando mucho en la actualidad. Charles W. Stone, de Pennsylvania, que hace algunos años fué presidente del Comité de la Cámara sobre monedas, pesas y medidas, preparó un comprensivo informe sobre este asunto. Fácil es comentar sobre sus ventajas; pero el sentimiento nacional se mueve my lentamente, aunque cuando llega á moverse algo parece ser siempre hacia la uniformidad.

Fomenta el Comercio con el Extranjero

Al nombrar agentes especiales para investigar las condiciones del comercio de los paises extranjeros, con el fin de fomentar el comercio americano, el Departamento de Comercio y Trabajos ha dado un paso acertado. Un acuerdo del Congreso autorizó al Departamento de Comercio para que hiciese esos nombramientos, que son cinco. Esa medida se lleva á cabo el primero de Julio, y se espera que poco despúes partirán esos agentes para cumplir con sus respectivas misiones, pero como el crédito acordado para esa empresa no es más que de $30,000 se ha tenido que limitar el campo de sus investigaciones. Sin embargo, dos agentes irán al Oriente, uno ha empezado ya sus trabajos en Sud América, otro se destina al Canadá primero, y luégo á México y Centro América, mientras que el quinto irá á las Antillas, Venezuela y las Guayanas Británica, Francesa y Holandesa. Deberán presentar sus respectivos informes al terminar el presente año. La obra de esos agentes es investigar el estado de las relaciones comerciales de esos países con el nuestro, para descubrir qué proporción de sus negocios mercantiles les corresponde á los Estados Unidos, y qué métodos hay que adoptar para aumentar dichas relaciones comerciales. El Departamento ha promulgado las instrucciones dadas á esos agentes definiendo el alcance de sus trabajos; pero se necesitan informes útiles, aunque tengan que traspasar los límites de dichas instrucciones.—*Bradstreet's.*

Joseph Gillot, un joyero inglés, inventó la pluma de acero. Un dia se le rajó casualmente la punta de uno de sus más finos instrumentos de acero usados para fabricar las joyas, y malhumorado lo arrojó al suelo. Una hora después tuvo que escribir una carta; pero no pudo hallar su pluma de ave por más que lo registró todo buscándola. Mirando al suelo vió el instrumentito rajado; lo cojió, trató de escribir con él, y logró hacerlo satisfactoriamente. Desde entonces empezó á fabricar las plumas de acero.

INTENTIONAL SECOND EXPOSURE

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Im Firmenverzeichnis für Käufer das im ersten Theil dieses Blattes wiedergegeben ist, werden unsere geehrten Leser die betreffenden Waarenartikel in deutscher Sprache wiedergegeben finden. Es geschieht dies um ihnen die Möglichkeit zu geben, mit unseren Inserenten leichter korrespondiren zu können.

Die sechs Millionen Einwohner von Thibet müssen eine Armee von 430.000 Priestern unterstützen die weiter nichts zu thun haben, als schön illustrirte Exemplare heiliger Schriften zu vervielfältigen. Genannte Priester bekleiden auch alle öffentlichen Aemter.

Die Zahl aller an den Eisenbahnwegen der Welt befindlichen Querbalken wird auf ungefähr 1.494.000.000 veranschlagt und deren Werth auf fast 900 Millionen Dollar berechnet. Dieser Posten bildet eine gar ungeheuere Abzugsquelle in der Holzlieferung der Welt.

Der Mönch Roger Bacon soll der erste Brillenanfertiger, und zwar, im Jahre 1280 gewesen sein. An einer Grabschrift in Florenz jedoch, datirt 1290, ist zu ersehen, dass diese Ehre einem anderen Manne gebühre. Die Inschrift lautet: "Hier ruht Salvino degli Aramati, Erfinder der Brillen. Möge Gott ihm diese Sünde vergeben." Im sechzehnten Jahrhundert wurden in Holland und in Deutschland die Brillen allgemein.

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Russland, das als zweites theekonsumirendes Land dasteht, verbraucht nur 21.000.000 Pfund Kaffee.

Deutschland steht als erstes bierbrauendes und biertrinkendes Land voran; die britischen Insellånder schliessen sich dicht an, wenn sie auch im Verhältnis zur Einwohnerzahl voraus sind. Die Vereinigten Staaten folgen als das dritte der Reihe, dann kommt Oesterreich-Ungaren mit einer Billion Gallonen weniger als die Vereinigten Staaten. Alle diese Länder zusammen verbrauchen ungefähr 95 Proz. vom Totalbiergehalt der Welt. Italien verbraucht nur ca. 7 Millionen pro Jahr gegen 1.783.000.000 Gallonen die in Deutschland konsumirt werden, das weniger als die doppelte Einwohnerzahl des kleineren Landes hat.

In der Fabrikation und Konsumation von distilirtem Branntwein steht Russland allen anderen Ländern voran, 174.000.000 Gallonen aus einem Total von 687.000.000 Gallonen die in acht Ländern, von welchen Statistike erhalten wurden, verbraucht werden. Deutschland steht zunächst, mit 124.000.000 Gallonen, welches Quantum jedoch, dem russischen Alkoholgebrauch, im Vergleich zur Einwohnerzahl, übersteigt. Die Vereinigten Staaten nehmen den dritten Platz ein und konsumiren gegen 121.000.000 Millionen pro Jahr, dann Frankreich, dann das britische Königreich, Ungaren u. s. w. Wieder scheint sich Italien als Mässigkeitsland auszuzeichnen, indem es nur 11.000.000 Gallionen distillirten Branntweins konsumirt.

Mit Bezugnahme auf Wein sind die Konditionen allerdings ganz verschieden. Italien trinkt mehr als 928.000.000 Gallonen und steht nur Frankreich nach, wo letztes Jahr 1.343.000.000 Gallonen verbraucht wurden. Spanien folgt als drittes Land mit einem Verbrauch von 331.000.000 Gallonen und Oesterreich-Ungaren, welches 231.000.000 Gallonen konsumirt, kommt zunächst. Deutschland trinkt nur 124.000.000 Gallononen Wein jährlich und das kleine Portugal 72.000.000 was im Durchschnitt weit mehr ist als die von den Vereinigten Staaten verbrauchten 43.000.000 Gallonen. Obgleich Wein in britischen Romanen und Schauspielen eine hervorrogende Relle einnimmt, ist der Verbrauch desselben in jenem Lande ein geringer und belief sich letztes Jahr auf nur 17.000.000 Gallonen.

Kaffee wurde im Jahre 1285 von einem Dervisch, Namen Hadji Omar, einem Eingeborenen der Stadt Mokka, entdeckt—in Folge dessen der allsobekannte Name. Hadji Omar, der sich in einer arabischen Wüste verirrt hatte, hätte eines Hungertodes sterben müssen, wenn er nicht eine kleine runde Beere zufällig entdeckt hätte. Als er sie aber essen wollte, fand er sie zu seinem Leidwesen widerlich bitter. Er versuchte dann sie zu brennen und tauchte endlich einige der so gebrannten Beerenbohnen ins Wasser. Natürlich wurde Kaffee daraus. Und obgleich es Kaffee schlechtester Art war, fand Hadji Omar ihn dennoch so ausserordentlich schmackhaft, dass er, sobald er sich aus der Wildernis zurechtgefunden hatte und in seine Vaterstadt wiederkam, die weisen Männer derselben in dieses neue Getränk einweihte. Alle erwiesen sich damit so kollossal zufrieden, dass sie ihn später zum Heiligen machten.

Zur Beförderung des ausländischen Handles

Durch die Ernennung von Spezialagenten zur Erforschung der Handelszustände im Auslande behufs Beförderung des amerikanischen Handels, hat das Handels und Gewerbe-Ministerium einen Schritt in der rechten Richtung gethan. Die Aufgabe dieser Agenten, von denen fünf zur Auswahl und Ernennung bestimmt wurden, wurde diesem Ministerium durch einen Beschluss des letzten Kongresses überwiesen. Diese Massregel tritt am ersten Juli in Kraft und es ist vorauszusehen, dass die betreffenden fünf Agenten bald nachher ihre Mission antreten werden. Aber nachdem das dazu bewilligte Geld nur etwa dreissig Tausend Dollar beträgt, muss das Feld ihrer Nachforschungen natürlich ein beschränktes bleiben. Wie dem auch sei, zwei Agenten gehen nach dem Oriente, ein anderer hat bereits seine Arbeit in Süd-Afrika angetreten, ein Dritter ist nach Kanada bestimmt und später nach Mexiko, sowie nach den Ländern in Central-Amerika, während ein fünfter Westindien, Venezuela und das britische, holländische und französische Guiana zum Ziele seiner Nachforschunger hat. Die Berichte sind bis Ende des gegenwärtigen Jahres einzureichen. Die Aufgabe der Agenten liegt darin, die Handelsverbindungen mit den zu besuchenden Ländern zu prüfen, ausfindig zu machen im welchem Verhältnisse die Vereinigten Staaten an diesem Handel theilnehmen und was für Methoden adoptirt werden könnten, um denselben zu erhöhen, auszudehnen. Das Ministerium hat, allerdings, den Agenten Instruktionen ertheilt, welche die Thätigkeit derselben begrenzen, jedoch versteht es sich von selbst, dass nützliche Auskünfte erwünscht sind, selbst wenn die Grenzen der erhaltenen Instruktionen überschritten werden müssen, um dieselben einzuholen.

Ein Motor-Wettbewerb für lange Distanz

Eine von Ocean zu Ocean sich erstreckende Tour wird mit einem Gasolin-Motorwagen auf der Eisenbahnstrecke die zum Harriman Bahnsystem gehört geplant. Die Beamten der Harriman Eisenbahn behaupten, dass sie nun einen praktisch arbeitenden Gasolin-Motor gebaut haben der an Wichtigkeit nur einer Lokomotive allerperfektester Art zunächst stehe. Der Wagen wird direkt getrieben und zwar mit einer Gasolin Maschene ohne die Unbequemlichkeit eines elektrischen Motors. Der Haupgrund für die Errichtung solcher Motoren liegt in der Ermöglichung der Eisenbahnen mit den elektischen Bahnen zu konkuriren und in der Weise Unkosten auf ihren Zweiglinien sparen zu können.

Eines Erfinders einzig dastehendes Testament

Herr Alfred B. Nobel, der Erfinder des Nytro-Glycerins und Dynamits starb im Jahre 1896 und hinterliess ein Vermögen, welches auf ungefähr zehn Millionen Dollar geschätzt wurde. Er verordnete dass sein ganzes Vermögen der Sache der Wissenschaften gewidmet werde und in Uebereinstimmung mit den Verordnungen des Testamentes kann nur das Einkommen dieser Summe verwendet werden, welches jährlich in fünf gleiche Theile getheilt wird. Einen Theil erhält Derjenige, welcher die wichtigste Erdindung auf dem Gebiete der Chemie macht; ein anderer Theil ist für den Mann bestimmt, welcher die wichtigste Entdeckung in der Physiologie oder der Arzneikunde hervorruft; einen Theil erhält Derjenige, welcher das beste Buch idealistischer Natur schreibt und der fünfte Theil ist für den Mann bestimmt, welcher die beste Arbeit für das Wohl der Nationen vollbringt, wie z. B. die Unterdrückung oder Verringerung der existirenden Armeen und die Bildung und Erweiterung von Friedenskongressen. Diese Belohnungen werden ohne Rücksicht auf Nationalität ertheilt, denn Herr Nobel selbst war Kosmopolitaner, welcher in vielen Ländern gelebt hatte. Die Freunde des Kongress-Mitgliedes Bartholdt von St. Louis haben sich die Aufgabe gestellt, den in der letzten Klausel des Nobelschen Testamentes bedingten Preis für genannten Staatsmann zu erringen. Die Ansprüche des Herrn Bartholdt basiren sich auf seine Arbeiten in der Sache des interparlamentarischen Kongresses von St. Louis im letzten Sommer. Durch die Anstrengungen Herrn Bartholds hat dieser Kongress den Präsidenten Roosevelt angegangen die Friedenskonferenz in der Haag wieder zusammenzuberufen. Sollte daher Herr Barthold diesen Preis erobern, so wird er in den Besitz der schönen Summe von 35.000 Dollar gelangen.

Ein neuer Regenerzeuger

Kalifornien, das Land der Wunder, von dem Preisfaustkämpfer angefangen, hat einen neuen Anspruch auf Berühmtheit im vergangenen Jahre gemacht, als ein junger Professor der Naturwissenschaften des goldenen Staates die Gläubigen und Skeptiker in gleicher Weise durch die beliebige Erzeugung von Regen auf das Höchste in Erstaunen versetzte. Charles Malory Hatfield ist der Namen dieses jungen Zauberers in der Witterungslehre, welcher heute in der Meinung mancher Kalifornier so hoch steht, wie Luther Burbank, der Schöpfer neuer Formen von Gemüsen und Früchten und der Erzeuger der "Burbank Kartoffel."

Herr Hatfield trat, soweit dem grösseren Publikum bekannt ist, vor ungefähr einem Jahre in den Vordergrund. Er verdankt seinen grossartigen Ruf als Regenerzeuger nicht einem einzigen Sturme, sondern einer ganzen Reihe von erfolgreichen Resultaten von Regenfällen so dass nicht weniger als dreissig der hervorragendsten Geschäftsmänner und Kaufleute von Los Angelos einen Kontrakt machten, demzufolge sie an Hatfield die Summe von tausend Dollar in Gold auszuzahlen hatten, wenn der Letztere vor dem ersten März 1905 einen Regenfall von 18 Zoll bewerkstelligen könne. Dieser kontrakt traf im December 1904 in Kraft. Die Regierungs Feuchtigkeitsmesser zeigten einen grösseren Regenfall einen Monat vor der im Kontrakte bestimmten Zeit, und der ganze Regenfall bis jetzt betrug in Los Angelos 18.76 Zoll, also beinahe zweimal soviel als in dieser Lokalität in einem der letzten Jahre konstatirt wurde. Hatfield erhielt sein Geld von den Kaufleuten ohne dass irgend welcher Einspruch gemacht werden konnte.

Die von Hatfield angewendeten Methoden gleichen den von den gewöhnlichen Regenerzeugern gebrauchten ebenso wenig wie sein Aussehen dem eines Charlatans gleicht. Er war indes genöthigt angesichts des Spottes, Hohnes und des Gelächters Aller zu arbeiten, bis endlich die erstaunlichen Ansprüche, welche er machte durch solch prompte Resultate in der von ihm vorausgesagten Weise gerechtfertigt wurden, dass Kritiker sowohl als Skeptiker miteinander verstummten. Wenn nun die Sonne ohne Unterlas sieben oder mehr Wochen lang brannte, wenn der Himmel nicht eine Spur von Feuchtigkeit zeigte und dies in einer Jahreszeit wenn der Gutsbesitzer in Kalifornien auf das Erscheinen der Wolken und auf einen reichlichen Wasserfall für den Rest des Jahres zu erwarten berechtigt ist, dann ist der Mann, welcher mit wohl bekannten Geschäftsleuten einen Kontrakt eingeht, nach welchem er Regen hervorzubringen sich verpflichtet und der Regen wirklich binnen drei Tagen in Strömen fällt, so ist derselbe sicherlich zu mehr als einer vorübergehenden Erkenntlichkeit in Kalifornien berechtigt—und dies ist was Hatfield gethan hat.

Missionäre rufen Handelsverbindungen hervor

Es ist lange schon als Thatsache bekannt, dass Missionäre als Erweiterer des Handels und Wandels gelten und zwar dadurch, indem sie überall vorgeschrittene Methoden und Einrichtungen eingeführt haben. Diese Thatsache wurde jüngst in einem Briefe von Herrn Gates an John D. Rockefeller, den Chef der Standard Oil Co. hervorgehoben, als die amerikanische Missions-Verwaltung ihm um eine Gabe von 100.000 Dollar nachsuchte welche von ihm auch bewilligt wurde. Wir wissen, allerdings, nicht wie gross der Einfluss war welchen das Argument auf gen. Herrn hatte, doch wie aus folgendem Auszug ersichtlich, soll viel dieses Einflusses dazu beigetragen haben:

"Missionsanstalten und Missionsschulen, heisst es darin ‚führen moderne Wissenschaft, Dampf- und elektrische Kraft, moderne landwirthschaftliche Maschinerie und modernes Fabrikationswesen in fremden Ländern ein. Als Resultat dürfte z. B. allein schon die Einführung moderner Produktionskraft in jedem auswärtigen Theile der Welt angeführt werden. Dadurch muss sich mit der Zeit alle Erzeugungsmacht des Auslandes mehrfach vergrössern und erweitern.

"Als Käufer amerikanischer Produkte muss dieses Verfahren die Ausländer ungemein bereichern, wir, hingegen, als Importeure ihrer Erzeugnisse geniessen einen unsagbaren Nutzen. Wir befinden uns ja auch nur im ersten Begin des Handels, mit allen seinen Versprechungen, mehr als für alles Andere für das Pionirwerk und für die Möglichkeitsquellen die von christlichen Missionären eröffnet werden. Missionäre sind heute besonders einflussreich in der orientalischen Diplomatie. Die Schuld Amerikas den Missionären gegenüber wird, daher, rein unberechenbar. Doch die wahren Früchte kann man sich erst versprechen.

"Zum Beispiel: Unser Handel mit den Hawaiischen Inseln, welche endlich das Christenthum angenommen haben und keine Missions-Fonds mehr brauchen, beträgt nach mir ergangener Mittheilung 17 Millionen Dollar jährlich. Dieser Betrag zu 5 Proz. angelegt, würde allein die ganze Summe ausmachen welche die Civilisation zur Verchristlichung der dortigen Eingeborenen ausgegeben hat. Als die Missionäre zuerst dahinkamen waren die Hawaiianer noch Kannibalen—buchstäbliche Menchenfresser—ohne einen Dollarswerth Einfuhr oder Ausfuhr. Heute gelten diese Inseln als eine vortreffliche Einkunftsquelle des Reichthums und der Bequemlichkeit für das amerikanische Volk.

"Und was von Hawaii wahr ist, darf noch ausdrücklicher von Japan und seinem Handel behauptet werden. Missionärer Unternehmungsgeist—und wenn derselbe auch nur von einem kommerziellen Standpunkt aus betrachtet wird, darf, in der that, sehr profitable genannt werden. Vom Handpunkte des Lebensunterhaltes betrachtet, darf unsere Einfuhr aus heidnischen Ländern allein durch Missionsthätigkeit hervorgerufen, enorm genannt werden. Die aus den Heidenländern ausgeführten Artikel liefern uns viele Luxuswaaren zu billigen Preisen und nicht wenige der eingeführten Sachen dienen zur Bequemlichkeit der Existenz: viele sind heute Bedarfsartikel des täglichen Lebens geworden.

"Unsere Einfuhr balancirt sich, indes, mit der Ausfuhr nach jenen Ländern recht gut aus; unser Ausfuhrhandel wächst und erweitert sich ganz beispiellos. Ein solches Wachsen wäre unmöglich gewesen, wenn nicht das Bemühen der Missionäre es fertig gebracht hätte fremde Länder für den Handel zu gewinnen. Welch eine Wohlthat für die einheimische Industrie und für die Fabrikation! Ein Beamter der Stahlkorporation der Vereinigten Staaten theilte mir mit, dass seine Gesellschaft allein amerikanische Erzeugnisse nach 40 bis 50 verschiedenen Ländern hinversendet."

Joseph Gillott, ein englischer Juwelier, erfand die Stahlfeder. Eines Tages als er zufällig das Ende eines seiner feinen Stahlwerkzeuge, die er bei Anfertigung von Juwelen gebrauchte, durchspalten hatte, warf er es ärgerlich auf den Boden. Nach einer Stunde hatte er einen Brief zu schreiben. Wo doch die Pose hingekommen ist? Er suchte überall, konnte sie aber nirgends finden. Als er schliesslich auf den Boden blickte, entdeckte er das durchspaltene Werkzeug. Er versuchte damit zu schreiben und war auch erfolgreich. Daraufhin begann er Stahlfedern zu fabriziren.

Thatsachen über Stahl

Obwohl die Stahl- und Eisenindustrie eine der mächtigsten der ganzen Welt ist und solch reiche Belohnungen bietet, dass einige der grössten Chemiker und Gelehrten nichts Anderes studiren, so stossen dieselben doch auf eine Menge Räthsel, welche bis jetzt noch Niemand zu lösen imstande war. Derjenige welcher die rechte Antwort auf eine oder die andere dieser Fragen findet, kann eine Million dabei verdienen.

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Oft besteht neuer Stahl die Proben nicht welchen er unterworfen wird. Nach einigen Wochen, jedoch, zeigt es sich, dass er besser geworden ist und er die Proben zur grössten Zufriedenheit nun bestehen kann. Dann wieder "erkrankt" Stahl oft welcher bei den Proben perfekt gefunden wurde. Er bekommt Risse und wird spröde; obwohl ein zweites zur selben Zeit und in derselben Weise verfertigtes Stück Stahl fehlerfrei ausfällt. Niemand weiss heute wie dies geschieht, aber Viele möchten es gerne ausfindig machen.

Unser Präsident

Flottensekretär, Herr Paul Morton, welcher beim Banquett des Banquier Clubs in Chicago zugegen war, sprach frei des Lobes über Präsidenten Roosevelt. Nachdem er gewisse Phasen über die Leistungen des Präsidenten im Allgemeinen in Betracht gezogen hatte, bemerkte er:

"Herr Theodore Roosevelt charakterisirt vollkommen den idealen amerikanischen Bürger; er liebt das Leben im Freien; er ist voll von Kraft und Ehre; enthusiastisch in der Liebe zu seinem Vaterlande; ein ernster Befürworter für die Keuschheit des Heimes; sicher und gesund an Geist; immer wacker und muthig im Bestreben das zu vollbringen, was er sowohl im privaten wie im öffentlichen Leben richtig denkt, leitet er Alle nur zum Besten und weicht weder rechts noch links vom richtigen Pfade.

"Ich kenne wahrlich keinen Menschen, der eine so grosse Quelle von allgemeiner Information besitzt wie er; noch kenne ich einen Menschen, dem das öffentliche Interesse mehr ans Herz gewachsen ist, as gerade ihm; ich kenne keinen Menschen, der begieriger ist Ratschläge zu empfangen und sie zu befolgen; auch kenne ich keinen der schwerer arbeitet und sich ernster bemüht, Konditionen zum Wohle der Menschheit besser zu gestalten wie er; ich kenne keinen Menschen, der die Rechte des Arbeiters mit klarerem Auge erfasst hat oder der grösseren Erfolg zum Schutz und Recht des Besitzthums errungen hat wie gerade er.

"Das amerikanische Volk darf sich gratuliren, dass es einen Mann zu seinem ersten Beamten mit so riesiger Stimmenmehrheit erwählt hat, der weder äussere noch innere Feinde fürchtet und dem es stets darum zu thun ist, nicht allein auf Recht zu bestehen, sondern nach Frieden und Gerechtigkeit unaufhaltsam zu streben."

Das Geld der Welt

Ein Blick auf die jüngste Proklamation des Schatzamt-Sekretär's Shaw, in welcher er den Werth auswärtiger Münzen veranschaulicht liefert einen werthvollen Beweis, wie viele Geldsorten einen Werth von ungefähr 19 cent haben und schlägt gleichzeitig vor, ein Geldstück solcher Grösse als Universalmünze zu adoptiren, falls die Welt je zu diesem Entschluss gelangen sollte; denn ein Geldstück solcher Grösse kann ohne Schwierigkeit überall eingeführt werden. Der amerikanische Dollar könnte leicht vervielfältigt werden, dass fünf kleinere Geldwerthe daraus entstehen. Der Franc Belgiums, der Schweiz und Frankreichs, die Mark Finnlands, die Drachme Griechenlands die Lire Italiens, der Peseta Spaniens und der Bolivian Peso von Venezuela haben alle einen Werth von 19 Cent und 3-1000. Doch dies sind nicht alle Münzen die einen ungefähren Gleichwerth haben. Die Krone in Oesterreich- Ungarn ist ungefähr 20 Cent und 3/1000 werth, die Kronen von Norwegen, Schweden und Dänemark werden je auf 0.268 Dollar geschätzt, die deutsche Mark auf 0.238 Dollar und der britische Shilling gilt ungefähr 0.24335 Dollar.

Der chinesische Tahil ist eine der schwierigsten Münzen zur Umrechnung denn er variirt in Werth je nach der event. Lokalität und zwar von 66 bis sogar 73 Cent. Der Haikwan Tahil z. B., eine der gebräuchlichsten Münzen der man sich im Verkehr zu bedienen pflegt hat einen Werth von 0.732 Dollar; in Fuchau, ist der Tahil 0.665 Dollar werth; in Shanghai, 0.657 Dollar und in Tientsin 0.679 Dollar, Herr Sekretär Shaw bemerkt, dass Silberwährungsmünzen in Ländern wo die Silberwährung vorherrscht je nach ihrem reinem Silberwerth berechnet werden, und zwar zum Durchschnittsmarktpreise der drei vorangehenden Monate. Der mexikanische Dollar wird heute auf 0.477 Dollar beanschlagt und ist seit seiner neuen Einführung vom letzten Mai d. J. 0.498 Dollar werth. Der britische Dollar in Hongkong und Labuan hat denselben rechtlichen Werth wie der jetzige mexikanische Dollar. Der japanische Yen wird auf 0.498 Dollar angeführt und gilt ungefähr soviel als der neue mexikanische Dollar.

Einige Länder haben einen Dollar der einen etwas höheren Werth hat als unser eigener Dollar. Diese Münzeneinheit steht an Werth ungefähr drei Cent höher als der Peso von Uruguay und acht Cent höher als das Milreis in Portugal; der Neufundland Dollar ist ungefähr um 1 4/1000 Cent höher.

Das Universal-Münzenprojekt worüber Jefferson bereits vor hundert Jahren mit grossem Eifer schrieb, macht heute keinen allzugrossen Fortschritt. Herr Charles W. Stone von Pennsylvanien, welcher vor mehreren Jahren Vorsitzender des Hauskommittees für Münze, Gewichte und Masse war, bereitete einen ausführlichen Bericht über dieses Thema vor. Die Vorzüge dieses Projekts lassen sich leicht anführen. Empfindsamkeit schreitet allerdings langsam in solchen Sachen fort, doch wie langsam der Fortschritt auch sein mag, es ist immerhin ein Schritt in der gleichmässigen Richtung.

Die Vereinigten Staaten verbrauchen elf dreiviertel Pfund Kaffee für die Person jährlich der Bevölkerung gemäss. Kein anderes civilisirtes Land kommt ihnen auch um die Hälfte gleich, während England weniger als ein Pfund pro Person jährlich verbraucht. Wir stehen hier zwar in dritter Reihe als Bierkonsumenten (mit 18.28 Gallonen pro Person) und als Whiskey Konsumenten sogar in vierter Reihe. Der Weinverbrauch beträgt ungefähr eine halbe Gallone pro Person im Jahre.

FARM MACHINERY INVESTIGATIONS

An address by Prof. C. J. Zintheo delivered before the National Association of Agricultural Implement and Vehicle Manufacturers

Prof. C. J. Zintheo.

The success of agricultural pursuits depends primarily upon the accomplishment of the largest possible results at a minimum cost. For this reason agricultural implements are bound to become more and more important, because mainly through them can the farmer reduce the cost of production. To illustrate this it is only necessary to state that in 1830 it took over three hours' labor to raise one bushel of wheat, while in 1896 it took ten minutes, making a difference in the cost of labor in one bushel of wheat, between 18¾ cents and 3½ cents.

In 1850 the labor represented in one bushel of corn was four and one-half hours, while in 1894 it had been reduced to forty-one minutes. In 1860 the labor in one ton of hay in bales represented thirty-five and one-half hours, while in 1894 this labor was reduced to eleven and one-half hours—or from a cost of $3 in labor to $1.20. The American farmers of to-day, with less than one third the labor of the country, produce enough food to support not only themselves but the other 67 per cent. of people that live in the cities, and exported farm products during the year 1904 to the value of $900,000,000. Much of the credit of this great achievement is due to the American geniuses who have developed the modern farm implements and have supplied our farmers with tools by which they are able to produce more cheaply than any land under the sun, thereby enabling them to sell their products in the open markets of the world, in competition with the poorly paid laborers of other countries.

The American farmers buy annually $100,000,000 worth of farm implements, and the total value of machinery on the farms in this country is $761,261,000. On this vast investment the farmer ought to make a reasonable interest, and for this reason it is of great importance that the implements which he buys should meet all the requirements for which they were purchased. The efficiency of an implement does not depend entirely upon the amount of work it does, but also upon the power required to do the work, the simplicity of construction, the strength and durability of its material and its adaptability to varying conditions. In order to judge the practical value of any machine it is necessary that it be subjected to a careful, well arranged and impartial test. The farmers are not able to conduct such investigations, nor are the manufacturers able to pass impartial judgment on their implements. It is, therefore, of great value to have the machines and implements tested by competent, disinterested parties. Such investigations are quite new in this country, but they are not new in most of the European countries.

Since 1860 there have been conducted in Sweden trials of farm implements, either at the request of agricultural societies or in connection with agricultural fairs, but they were of little importance until the Government made appropriations for the expense of conducting these trials, which they did as early as 1886.

In 1896 the Swedish Government started the first official station for field trials of agricultural implements. In these trials were included seeding machinery, fertilizer spreaders, beet sugar tools, plows, harrows and land rollers, hay presses, cream separators, churns and butter workers, as well as pasteurizers and milk coolers.

It was soon learned that such trials were not only of benefit to the farmers in choosing their machines, but that they were of great value to implement manufacturers in that they pointed out defects in construction and weak points in the design of the machines. The chief reason for the rapid progress which has been made in Sweden in the manufacture of agricultural implements and dairy machinery is ascribed to impetus given through these official tests. As is well known Sweden supplies dairy machinery to practically all of Europe, and has a very large trade in Siberia, as well as other parts of the world.

The Swedish Government was urged by the implement manufacturers to appropriate money for the permanent establishment of experiment stations for the testing of implements. This was accomplished by a donation from the Separator Dairy Machinery Co., which in 1896 presented to the Department of Agriculture 100,000 crowns, of which 10,000 crowns was to be spent annually in farm machinery investigations. Two experiment stations were established in connection with the agricultural colleges, and equipped with instruments for conducting the experiments, which have been carried on regularly since that time, and bulletins of considerable merit have been issued.

Since 1877 field trials with farm implements have been conducted in Norway as a branch of the investigations of the Society for Norway's Welfare. The results of only part of these experiments have been published.

In Denmark farm implement experiments have been carried on at different times since 1872. At first they consisted of competitive field trials, at which medals and prizes were awarded, but since 1896 no awards have been made. The tests are now conducted mostly on implements that are new and not well known in the country. In this way they prove to be of great value, both to the farmers and implement manufacturers, in the introduction of new machinery.

The little country of Switzerland has for years been making farm implement field exhibits, under the auspices of the agricultural societies. These exhibits are well advertised, and the farmers from far and near come and receive instructions in the use, construction and operation of the various kinds of farm implements.

Belgium has for several years been giving considerable attention to the subject, and has made extensive tests of farm implements and machines, in connection with the courses of instruction on the subject maintained at all of the leading agricultural institutions of the country.

Italy has recently established farm implement experiment stations.

Russia conducts annual field trials with foreign made implements, at the agricultural colleges, and the students obtain practice in judging and comparing the parts of different makes of implements. Even in far off Siberia the writer had the privilege of taking part in the field trials between various makes of American binders and reapers. The trial was held at the Agricultural College at Tomsk, Siberia. After the contest the machines were taken to pieces by the college students and each part studied in detail, under the supervision of the college director and the instruction of the American experts. Russia has also established in Moscow and St. Petersburg permanent implement museums, in which are exhibited ancient as well as modern implements. These exhibits are proving to be of great value to the prospective purchasers, who come there to study the various kinds of implements. In this way they are able to decide what machines will best serve the requirements of their own community.

It was with a view of providing a link between the agricultural engineer and the farmer that the French Government instituted its machine-testing station near Paris, which is probably the most thoroughly equipped in the world for the scientific study of the principles of construction and efficiency of operation of farm implements and machinery. The study of agriculture in France has been so systematized and the whole country so mapped out that the possibilities and requirements of every district can be readily ascertained whenever there is a question of introducing improvements. Knowing exactly the requirements the men in charge are able to report upon the stability of any mechanism presented to them, and even to offer suggestions, as well as give unbiased reports upon their value for French agriculture. So good are the results which have been thus obtained that the practice is being followed in Spain, where has recently been established a machinery trial station upon the same lines. A similar department has been created by the minister of commerce and industry in the Netherlands, where agricultural engineers are given facilities for having their mechanism officially tested at the Agricultural Academy of Wangeningen.

It is, however, to Germany that the greatest credit is due for extensive trials of farm machinery, made under the auspices of the German Agricultural Society. This society was organized in 1885. The first implement exhibits and field trials were conducted in 1887, and have been held annually since that time.

These are competitive field trials, conducted by a chosen committee of judges, who are paid a per diem for the time employed. Prizes, medals and diplomas are presented to successful competitors. The expenses of the trials are borne partly by the manufacturers who enter the contest, and partly by the Agricultural Society, which has a very large membership. The results of the trials are presented in the year book published by the society.

Since 1892 the society has established a special annual exhibit for new inventions of agricultural machinery, for the purpose of permitting purchasers to make comparisons and to study new improvements and innovations. Only such machines can appear in this exhibit as have been patented within the previous twenty four months; or in case no patent has been sought have been in use not more than twelve months previous to the time of the exhibit.

The experiments conducted by the Agricultural Society have been very extensive and have included trials with electric motive power for farm purposes, steam plows and cultivators, the various kinds of dairy machinery, and equipments used for the manufacture of alcohol from farm products.

Thatsachen über Stahl

Obwohl die Stahl- und Eisenindustrie eine der mächtigsten der ganzen Welt ist und solch reiche Belohnungen bietet, dass einige der grössten Chemiker und Gelehrten nichts Anderes studiren, so stossen dieselben doch auf eine Menge Räthsel, welche bis jetzt noch Niemand zu lösen imstande war. Derjenige welcher die rechte Antwort auf eine oder die andere dieser Fragen findet, kann eine Million dabei verdienen.

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Oft besteht neuer Stahl die Proben nicht welchen er unterworfen wird. Nach einigen Wochen, jedoch, zeigt es sich, dass er besser geworden ist und er die Proben zur grössten Zufriedenheit nun bestehen kann. Dann wieder "erkrankt" Stahl oft welcher bei den Proben perfekt gefunden wurde. Er bekommt Risse und wird spröde; obwohl ein zweites zur selben Zeit und in derselben Weise verfertigtes Stück Stahl fehlerfrei ausfällt. Niemand weiss heute wie dies geschieht, aber Viele möchten es gerne ausfindig machen.

Unser Präsident

Flottensekretär, Herr Paul Morton, welcher beim Banquett des Banquier Clubs in Chicago zugegen war, sprach frei des Lobes über Präsidenten Roosevelt. Nachdem er gewisse Phasen über die Leistungen des Präsidenten im Allgemeinen in Betracht gezogen hatte, bemerkte er:

"Herr Theodore Roosevelt charakterisirt vollkommen den idealen amerikanischen Bürger; er liebt das Leben im Freien; er ist voll von Kraft und Ehre; enthusiastisch in der Liebe zu seinem Vaterlande; ein ernster Befürworter für die Keuschheit des Heimes; sicher und gesund an Geist; immer wacker und muthig im Bestreben das zu vollbringen, was er sowohl im privaten wie im öffentlichen Leben richtig denkt, leitet er Alle nur zum Besten und weicht weder rechts noch links vom richtigen Pfade.

"Ich kenne wahrlich keinen Menschen, der eine so grosse Quelle von allgemeiner Information besitzt wie er; noch kenne ich einen Menschen, dem das öffentliche Interesse mehr ans Herz gewachsen ist, as gerade ihm; ich kenne keinen Menschen, der begieriger ist Ratschläge zu empfangen und sie zu befolgen; auch kenne ich keinen der schwerer arbeitet und sich ernster bemüht, Konditionen zum Wohle der Menschheit besser zu gestalten wie er; ich kenne keinen Menschen, der die Rechte des Arbeiters mit klarerem Auge erfasst hat oder der grösseren Erfolg zum Schutz und Recht des Besitzthums errungen hat wie gerade er.

"Das amerikanische Volk darf sich gratuliren, dass es einen Mann zu seinem ersten Beamten mit so riesiger Stimmenmehrheit erwählt hat, der weder äussere noch innere Feinde fürchtet und dem es stets darum zu thun ist, nicht allein auf Recht zu bestehen, sondern nach Frieden und Gerechtigkeit unaufhaltsam zu streben."

Das Geld der Welt

Ein Blick auf die jüngste Proklamation des Schatzamt-Sekretär's Shaw, in welcher er den Werth auswärtiger Münzen veranschaulicht liefert einen werthvollen Beweis, wie viele Geldsorten einen Werth von ungefähr 19 cent haben und schlägt gleichzeitig vor, ein Geldstück solcher Grösse als Universalmünze zu adoptiren, falls die Welt je zu diesem Entschluss gelangen sollte; denn ein Geldstück solcher Grösse kann ohne Schwierigkeit überall eingeführt werden. Der amerikanische Dollar könnte leicht vervielfältigt werden, dass fünf kleinere Geldwerthe daraus entstehen. Der Franc Belgiums, der Schweiz und Frankreichs, die Mark Finnlands, die Drachme Griechenlands die Lire Italiens, der Peseta Spaniens und der Bolivian Peso von Venezuela haben alle einen Werth von 19 Cent und 3-1000. Doch dies sind nicht alle Münzen die einen ungefähren Gleichwerth haben. Die Krone in Oesterreich- Ungarn ist ungefähr 20 Cent und 3/1000 werth, die Kronen von Norwegen, Schweden und Dänemark werden je auf 0.268 Dollar geschätzt, die deutsche Mark auf 0.238 Dollar und der britische Shilling gilt ungefähr 0.24335 Dollar.

Der chinesische Tahil ist eine der schwierigsten Münzen zur Umrechnung denn er variirt in Werth je nach der event. Lokalität und zwar von 66 bis sogar 73 Cent. Der Haikwan Tahil z. B., eine der gebräuchlichsten Münzen der man sich im Verkehr zu bedienen pflegt hat einen Werth von 0.732 Dollar; in Fuchau, ist der Tahil 0.665 Dollar werth; in Shanghai, 0.657 Dollar und in Tientsin 0.679 Dollar, Herr Sekretär Shaw bemerkt, dass Silberwährungsmünzen in Ländern wo die Silberwährung vorherrscht je nach ihrem reinem Silberwerth berechnet werden, und zwar zum Durchschnittsmarktpreise der drei vorangehenden Monate. Der mexikanische Dollar wird heute auf 0.477 Dollar beanschlagt und ist seit seiner neuen Einführung vom letzten Mai d. J. 0.498 Dollar werth. Der britische Dollar in Hongkong und Labuan hat denselben rechtlichen Werth wie der jetzige mexikanische Dollar. Der japanische Yen wird auf 0.498 Dollar angeführt und gilt ungefähr soviel als der neue mexikanische Dollar.

Einige Länder haben einen Dollar der einen etwas höheren Werth hat als unser eigener Dollar. Diese Münzeneinheit steht an Werth ungefähr drei Cent höher als der Peso von Uruguay und acht Cent höher als das Milreis in Portugal; der Neufundland Dollar ist ungefähr um 1 4/1000 Cent höher.

Das Universal-Münzenprojekt worüber Jefferson bereits vor hundert Jahren mit grossem Eifer schrieb, macht heute keinen allzugrossen Fortschritt. Herr Charles W. Stone von Pennsylvanien, welcher vor mehreren Jahren Vorsitzender des Hauskommittees für Münze, Gewichte und Masse war, bereitete einen ausführlichen Bericht über dieses Thema vor. Die Vorzüge dieses Projekts lassen sich leicht anführen. Empfindsamkeit schreitet allerdings langsam in solchen Sachen fort, doch wie langsam der Fortschritt auch sein mag, es ist immerhin ein Schritt in der gleichmässigen Richtung.

Die Vereinigten Staaten verbrauchen elf dreiviertel Pfund Kaffee für die Person jährlich der Bevölkerung gemäss. Kein anderes civilisirtes Land kommit ihnen auch um die Hälfte gleich, während England weniger als ein Pfund pro Person jährlich verbraucht. Wir stehen hier zwar in dritter Reihe als Bierkonsumenten (mit 18.28 Gallonen pro Person) und als Whiskey Konsumenten sogar in vierter Reihe. Der Weinverbrauch beträgt ungefähr eine halbe Gallone pro Person im Jahre.

FARM MACHINERY INVESTIGATIONS

An address by Prof. C. J. Zintheo, delivered before the National Association of Agricultural Implement and Vehicle Manufacturers.

Prof. C. J. Zintheo.

The success of agricultural pursuits depends primarily upon the accomplishment of the largest possible results at a minimum cost. For this reason agricultural implements are bound to become more and more important, because mainly through them can the farmer reduce the cost of production. To illustrate this it is only necessary to state that in 1830 it took over three hours' labor to raise one bushel of wheat, while in 1896 it took ten minutes, making a difference in the cost of labor in one bushel of wheat, between 18¾ cents and 3½ cents. In 1850 the labor represented in one bushel of corn was four and one-half hours, while in 1894 it had been reduced to forty-one minutes. In 1860 the labor in one ton of hay in bales represented thirty-five and one-half hours, while in 1894 this labor was reduced to eleven and one-half hours—or from a cost of $3 in labor to $1.29. The American farmers of to-day, with less than one-third the labor of the country, produce enough food to support not only themselves but the other 67 per cent. of people that live in the cities, and exported farm products during the year 1904 to the value of $960,000,000. Much of the credit of this great achievement is due to the American geniuses who have developed the modern farm implements and have supplied our farmers with tools by which they are able to produce more cheaply than any land under the sun, thereby enabling them to sell their products in the open markets of the world, in competition with the poorly paid laborers of other countries.

The American farmers buy annually $100,000,000 worth of farm implements, and the total value of machinery on the farms in this country is $761,261,000. On this vast investment the farmer ought to make a reasonable interest, and for this reason it is of great importance that the implements which he buys should meet all the requirements for which they were purchased. The efficiency of an implement does not depend entirely upon the kind of work it does, but also upon the power required to do the work, the simplicity of construction, the strength and durability of its material and its adaptability to varying conditions. In order to judge the practical value of any machine it is necessary that it be subjected to a careful, well-arranged and impartial test. The farmers are not able to conduct such investigations, nor are the manufacturers able to pass impartial judgment on their implements. It is, therefore, of great value to have the machines and implements tested by competent, disinterested parties. Such investigations are quite new in this country, but they are not new in most of the European countries.

Since 1860 there have been conducted in Sweden trials of farm implements, either at the request of agricultural societies or in connection with agricultural fairs, but they were of little importance until the Government made appropriations for the expense of conducting these trials, which they did as early as 1886.

In 1896 the Swedish Government started the first official station for field trials of agricultural implements. In these trials were included seeding machinery, fertilizer spreaders, beet sugar tools, plows, harrows and land rollers, hay presses, cream separators, churns and butter workers, as well as pasteurizers and milk coolers.

It was soon learned that such trials were not only of benefit to the farmers in choosing their machines, but that they were of great value to implement manufacturers in that they pointed out defects in construction and weak points in the design of the machines. The chief reason for the rapid progress which has been made in Sweden in the manufacture of agricultural implements and dairy machinery is ascribed to impetus given through these official tests. As is well known Sweden supplies dairy machinery to practically all of Europe, and has a very large trade in Siberia, as well as other parts of the world.

The Swedish Government was urged by the implement manufacturers to appropriate money for the permanent establishment of experiment stations for the testing of implements. This was accomplished by a donation from the Separator Dairy Machinery Co., which in 1896 presented to the Department of Agriculture 100,000 crowns, of which 10,000 crowns was to be spent annually in farm machinery investigations. Two experiment stations were established in connection with the agricultural colleges, and equipped with instruments for conducting the experiments, which have been carried on regularly since that time, and bulletins of considerable merit have been issued.

Since 1877 field trials with farm implements have been conducted in Norway, as a branch of the investigations of the Society for Norway's Welfare. The results of only part of these experiments have been published.

In Denmark farm implement experiments have been carried on at different times since 1872. At first they consisted of competitive field trials, at which medals and prizes were awarded, but since 1896 no awards have been made. The tests are now conducted mostly on implements that are new and not well known in the country. In this way they prove to be of great value, both to the farmers and implement manufacturers, in the introduction of new machinery.

The little country of Switzerland has for years been making farm implement field exhibits, under the auspices of the agricultural societies. These exhibits are well advertised, and the farmers from far and near come and receive instructions in the use, construction and operation of the various kinds of farm implements.

Belgium has for several years been giving considerable attention to the subject, and has made extensive tests of farm implements and machines, in connection with the courses of instruction on the subject, maintained at all of the leading agricultural institutions of the country.

Italy has recently established farm implement experiment stations.

Russia conducts annual field trials with foreign-made implements, at the agricultural colleges, and the students obtain practice in judging and comparing the parts of different makes of implements. Even in far-off Siberia the writer had the privilege of taking part in the field trials between various makes of American binders and reapers. The trial was held at the Agricultural College at Tomsk, Siberia. After the contest the machines were taken to pieces by the college students and each part studied in detail, under the supervision of the college director and the instruction of the American experts. Russia has also established in Moscow and St. Petersburg permanent implement museums, in which are exhibited ancient as well as modern implements. These exhibits are proving to be of great value to the prospective purchasers, who come there to study the various kinds of implements. In this way they are able to decide what machines will best serve the requirements of their own community.

It was with a view of providing a link between the agricultural engineer and the farmer that the French Government instituted its machine-testing station near Paris, which is probably the most thoroughly equipped in the world for the scientific study of the principles of construction and efficiency of operation of farm implements and machinery. The study of agriculture in France has been so systematized and the whole country so mapped out that the possibilities and requirements of every district can be readily ascertained whenever there is a question of introducing improvements. Knowing exactly the requirements the men in charge are able to report upon the stability of any mechanism presented to them, and even to offer suggestions, as well as give unbiased reports upon their value for French agriculture. So good are the results which have been thus obtained that the practice is being followed in Spain, where has recently been established a machinery trial station upon the same lines. A similar department has been created by the minister of commerce and industry in the Netherlands, where agricultural engineers are given facilities for having their mechanism officially tested at the Agricultural Academy of Wangeningen.

It is, however, to Germany that the greatest credit is due for extensive trials of farm machinery, made under the auspices of the German Agricultural Society. This society was organized in 1885. The first implement exhibits and field trials were conducted in 1887, and have been held annually since that time.

These are competitive field trials, conducted by a chosen committee of judges, who are paid a per diem for the time employed. Prizes, medals and diplomas are presented to successful competitors. The expenses of the trials are borne partly by the manufacturers who enter the contest, and partly by the Agricultural Society, which has a very large membership. The results of the trials are presented in the year book published by the society.

Since 1892 the society has established a special annual exhibit for new inventions of agricultural machinery, for the purpose of permitting purchasers to make comparisons and to study new improvements and innovations. Only such machines can appear in this exhibit as have been patented within the previous twenty-four months; or in case no patent has been sought have been in use not more than twelve months previous to the time of the exhibit.

The experiments conducted by the Agricultural Society have been very extensive and have included trials with electric motive power for farm purposes, steam plows and cultivators, the various kinds of dairy machinery, and equipments used for the manufacture of alcohol from farm products.

INTENTIONAL SECOND EXPOSURE

Since 1902 they have accomplished splendid results in encouraging the invention and manufacture of motors, lamps and cooking apparatus, which utilize denaturized alcohol. Through this means the somewhat depressed agricultural conditions in Germany have been revived, as new and profitable sources for utilizing the raw materials of the farm have been found.

Besides this there have been established in several of the provinces of Germany, in connection with the agricultural colleges, implement experiment stations to which manufacturers can send their machines and have them tested for accuracy of work, strength and durability. From the reports and suggestions offered by the committee in charge of these tests the manufacturers may draw conclusions as to the success their machines may have with the farmers, and also possible lines of improvement. The results of these tests may, or may not be published. If a test should prove that the machines are not satisfactory the manufacturers may request that the results of the test be withheld from publication.

The Agricultural High School at Berlin has a well-developed and efficient department of farm machinery, with perhaps the most extensive museum of models in the world. A very complete equipment for the detailed scientific study of principles of construction and operation is now being installed. In the opinion of the head of that department nothing has done more to improve the agricultural methods in Germany than the study by the young men of the tools of their own and other countries, and out of it have resulted many improvements in construction.

In our own country conditions are somewhat different from those in any of the foreign countries mentioned. There is more need of farm implement testing in Europe than in America, because manufacturers are not so far advanced and the farmers are less disposed than the American farmers to use improved machinery and implements. The major part of the European tests in the past have been demonstrations in order to interest the farmers, but now the experiments are made more scientific for the benefit of manufacturers. With our numerous implement factories and their enormous annual output, there is no need of encouragement in manufacture.

It is perhaps not advisable to conduct competitive field trials between various makes of machines and to offer prizes for such trials. The method adopted in foreign countries of publishing in their reports the names of the machines tested, is also open to debate as far as this country is concerned, in view of the unfair advantage that might be taken of such methods of advertising. There is still a wide field of usefulness open to the agricultural experiment stations and the Federal Government, by which they are able to substantially aid both the farmers and implement manufacturers by their farm machinery investigations.

Only in recent years have the agricultural colleges recognized the importance of giving instructions to their students in the construction, care and operation of farm implements. At the present time numerous colleges are about to establish courses in farm mechanics.

I have found by experience that instruction in farm machinery cannot be obtained by reading text-books, but the students must have actual practice in erecting, adjusting and operating the machines before they understand the principles of construction. In order that the students may judge the merits of implements they must have practice in testing them and make comparisons. For this reason the well-planned farm mechanic courses give considerable time to research work, in which the students, under the direction of the instructor, experiment with the farm tools and learn their merits and defects. Notwithstanding the large amount of farm machinery manufactured in this country there is very little reliable information available for the students and farmers who wish to become posted on the machines. This is another reason why the agricultural colleges should conduct investigation and collect information on the subject.

The farmers of the country have become accustomed to writing to the agricultural colleges and the Department of Agriculture for information on any subject in which they are interested. In order that the questions asked on farm machinery may be answered intelligently, it is necessary for the men in charge of the work to investigate the merits of the machines and to learn by actual experiments just what the farmer should expect the machine to accomplish. The information published by the experiment stations on other agricultural subjects is eagerly sought for by the farmers, and there is no reason why information on agricultural machinery should not prove to be of equally great value to them as it has proved to be to the farmers of Europe.

From the manufacturer's standpoint there is no way in which he can better advertise his goods than to co-operate with the agricultural colleges in order that the progressive future farmers may become familiar with the machines. It is also quite advisable for manufacturers, when they are making any marked changes in the construction of their machines or introducing new machines, to have them thoroughly tested by competent and disinterested men at the agricultural experiment stations, who know the agricultural requirements and are able to inform the manufacturers if the implements are able to satisfactorily meet these requirements.

To be sure, all responsible implement manufacturers have their own experimental departments, in which more or less care is exercised in the development of machines and the improvement of the parts. It often happens that the men who are doing this work have a great many other duties to perform, and consequently the experimental work is not as thorough as it might be. But even with the best of care exercised by such departments, the judgment passed upon the machines is only from the manufacturer's and not from the farmer's standpoint. If the perfected machines were sent to some implement experiment station and there subjected to thorough scientific and impartial tests from the buyer's standpoint, and compared with similar machines of other makes, these tests would probably save the manufacturers thousands of dollars. Cases are perhaps familiar to most of you, where incorrectly designed machines put on the market in large numbers have almost ruined the manufacturers.

It is hoped that the courses of farm mechanics in the colleges will develop into departments of agricultural engineering, from which implement manufacturers may obtain graduates trained in agriculture and mechanical work, who will make valuable employees in their experimental departments. The men now employed in designing and implement experimentation were often trained for something else, as at present there are no schools of training in this country for agricultural engineers. For this reason these men are often lacking in either the necessary agricultural or mechanical training, and as the implement manufacturers have to rely to a large extent upon their experimental departments, it is exceedingly important that these men should not lack either of these lines of training.

It may be advisable to refer to some of the lines of farm machinery investigation which the office of experiment stations of the Department of Agriculture is planning to conduct in the near future.

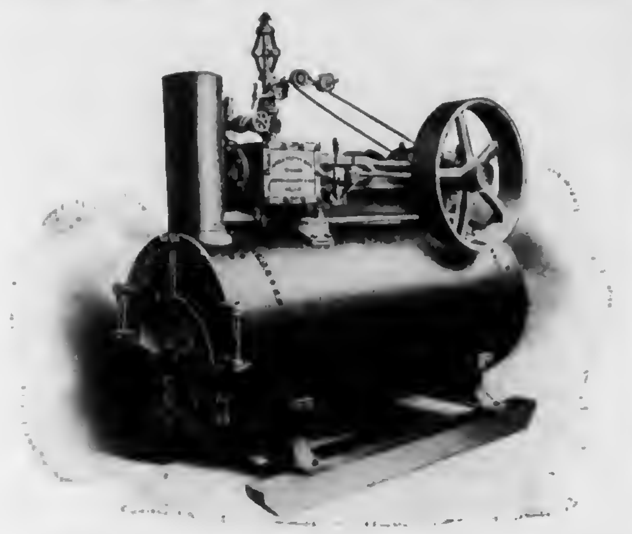
The grain harvesting machinery practically reached its present state of perfection about fifteen years ago, and a bulletin on the development of the reaper has been issued by the office of experiment stations.

Owing to the more difficult problems to be solved in harvesting corn by machinery, implements for this purpose have only come into use during the last fifteen years. There are now numerous corn binders, shockers, pickers, huskers and shredders on the market, which have materially aided the farmers. A valuable field of investigation will be to trace development of these machines and to learn just what saving the investment in the various corn-harvesting machines will be to the farmer, or what interest he will make on his investment; the amount of work which can be done per day, as well as the efficiency, durability and draft of the machines.

The corn planter is still in a stage of development and broad claims are made for both the edge drop and round hole plate methods of dropping the corn kernels. From experiments already conducted it has been learned that this is a fruitful field for investigation by the experiment stations. Letters have been received from corn planter manufacturers stating that they have improved the accuracy of drop over 20 per cent. by following the suggestions offered by the experimenters on their planter.

It was found that the edge drop planter would do more accurate work by grading the corn kernels into uniform size. This is a tedious work to do by hand, and the attention of manufacturers of fanning mills was called to the need of a corn-grading machine. Several firms made attempts to construct such a machine, with the result that three machines were produced, working on entirely different principles, one of which will grade corn more accurately into uniform size than can possibly be done by hand. To realize the importance of these experiments it is only necessary to state that by the use of corn planters that will drop the corn uniformly a pre-determined number of kernels per hill, the yield of corn per acre can easily be increased 20 per cent. This increase in yield would in a single year more than pay for all the corn planters made.

The manure spreader has in recent years been added to the list of implements sold by the majority of implement dealers. In some localities their introduction is not making much headway, for the reason that it is hard to convince farmers, and especially tenant farmers, that the price paid for a manure spreader is a profitable investment. Experiments conducted to determine the time saved by the use of the manure spreader, the advantage of its use over the hand method, and the interest which the farmer may expect to make on his investment, will certainly be both timely and valuable.



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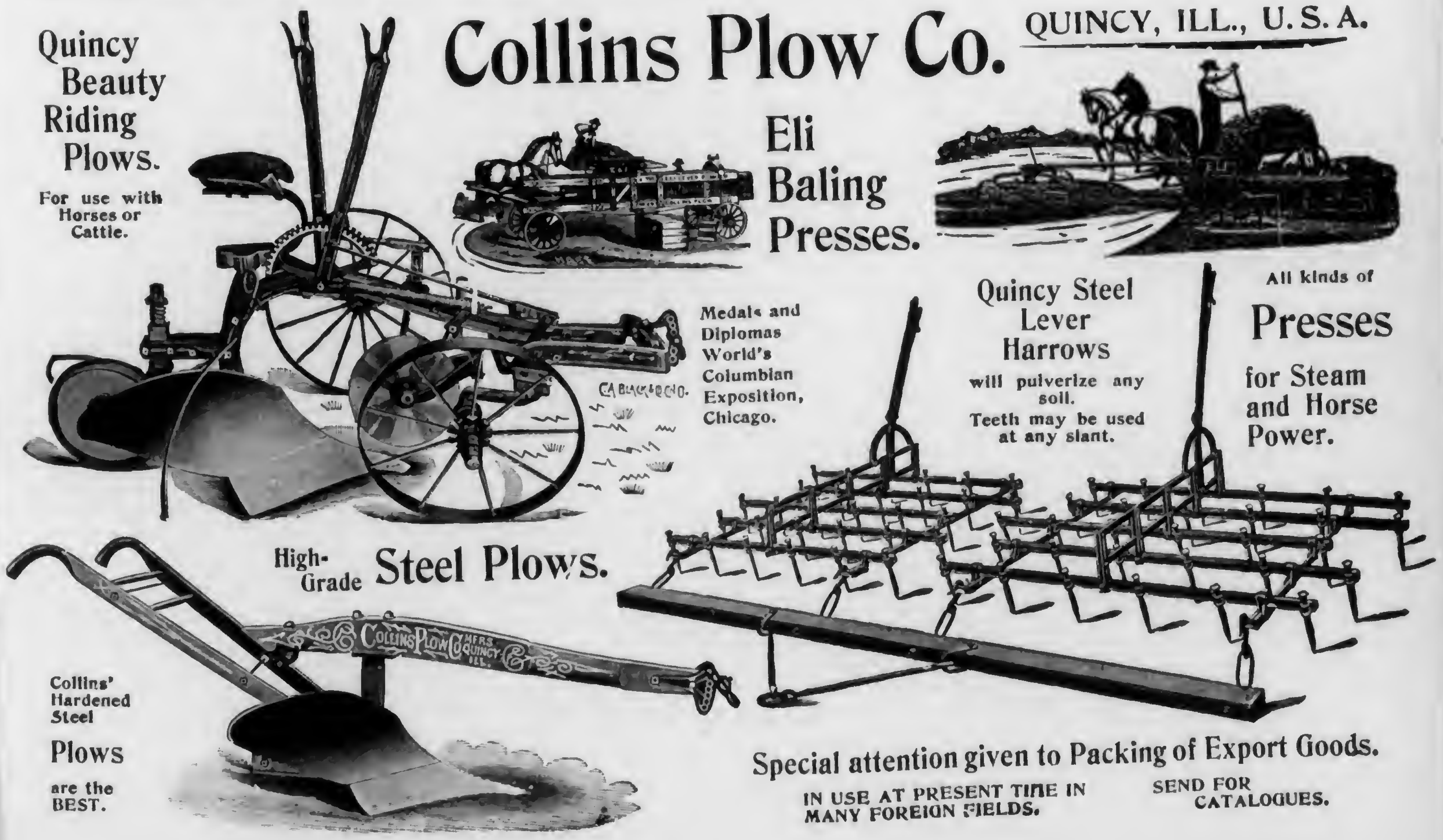
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The subject of grain drills has never been adequately investigated. Drills are now made in a great many ways, such as single disc, double disc, shoe and hoe drills, and the rows are planted six, seven, eight and ten inches apart. Which of these kinds of drills can be used to the best advantage in the various sections of the country, is still an open question, as no experiments have been conducted to accurately determine which will produce the best yield and the lightest draft. We hope to conduct experiments which will answer these questions.

In threshing small grain with our modern threshing machines, it is claimed by those who have studied the subject that the loss through improper separation, due to ignorance in the handling of the machines or to improper designs, amounts to nearly one bushel per acre on the average. This loss would amount to over 8,000,000 bushels for a single State in which wheat is the principal crop raised. We hope to determine just what the loss from this source is, and through suggestive changes in the separators reduce it to a minimum.

The disc plow has been introduced in the last few years, and is claimed by some manufacturers to be suitable in any soil; by others to be adapted to only certain localities, and by still others to be in no case equal to the moldboard plow. A fruitful field will be the investigation of the merits of the disc plow compared with the moldboard plow, in co-operation with experiment stations and farmers, to compare the draft, efficiency of work, and yield per acre when using disc and moldboard plows in various sections of the country, and thus try to answer the questions often asked by farmers as to when and where to use the disc plow or the moldboard plow.

The semi-arid region of the West, which comprises about one-fourth of our agricultural domain, is still of very little value for farming purposes. Much of this land will be brought under irrigation, and new varieties of farm implements will be needed to cultivate the crops on these lands. There will still remain large areas which will be devoted to dry farming. New drought-resisting varieties of grain are being introduced into those sections and special implements, entirely unknown in the East, are being used for the conservation of moisture in the soil.

We are now co-operating with the experiment stations in that section, and with the Union Pacific, Northern Pacific and Great Northern Railroads, in tests of tools for conserving the moisture in the soil and utilizing all the available rainfall for the production of crops. The implements used in these experiments will be carefully investigated, and we hope to be of assistance to both the farmers and implement manufacturers in determining what methods and implements to use in the soil cultivation in these sections.

The traction engine is now being introduced on the large farms of the Western States to take the place of horses for plowing, cultivating and seeding. No accurate investigations have as yet been made to determine the efficiency of this method of soil cultivation or the comparative cost between the use of horses and other forms of motive power for the farm. We hope to be able to investigate the subject so that both the farmers and manufacturers may know when and where traction engines can be economically employed for farm cultivation.

The windmill has been used for years for pumping purposes on the American farm, but for other power purposes it is hardly built strong enough to be of much value. There is an enormous amount of energy going to waste with the movement of the wind, which in the semi-arid region of the West could be utilized in pumping water for irrigation, if suitable windmills were constructed to utilize the full power of the wind. In order to do this it will be necessary to invent some automatic arrangement which will vary the length of the stroke of the piston, with the velocity of the wind. We are now experimenting with several different makes of windmills in the Western States, to determine what can be done with windmill irrigation.

The subject of power for the American farm is now in the transition period. Where formerly all the farm work was done by the horses and an occasional windmill for pumping water, the gasoline engine is now finding rapid favor as a farm motor, and its usefulness can be greatly extended in doing much of the disagreeable work on the farm. The farmers need information on methods of installing their power plants, so that they may use these motors economically and to the best advantage.

Numerous and conflicting statements are made as to the amount of gasoline used per horse-power hour, and no definite information, from actual tests, is available, from which the users of these engines may know the cost of producing power. An investigation of this subject will be of great value both to the farmer and the manufacturers. With the introduction of the gasoline engine comes the increase in cost of the gasoline, to almost double the price of a few years ago, and the producers claim that the demand will soon exceed the supply. It is, therefore, of the utmost importance to find some other fuel to take the place of gasoline in internal combustion engines. Germany has investigated this problem to the great advantage of her farmers.

Germany has no natural gas wells or native petroleum supply. When some years ago the question of adopting motor carriages for military purposes was under discussion, it was remarked by the officials of the War Department that kerosene and gasoline engines could only be operated with one or the other of the products of petroleum, which is not produced in Germany and the supply of which might, in case of war, be wholly cut off. But the broad sand plains of northern Germany produce, in ordinary years, cheap and abundant crops of potatoes from which is easily manufactured by processes so simple as to be within the capacity of every farmer, a vast quantity of raw alcohol. German inventors and scientists have been busy with improvements in the processes of machinery and distilleries. New and highly perfected motors, lamps and cooking and heating apparatus have been devised and put into use until crude alcohol is becoming one of the most widely utilized products of German industry. The German Government has encouraged this industry in every way possible, and has removed all taxes from alcohol used for technical purposes. The alcohol has been produced in Germany for 13 cents per gallon, and with very slight changes can be utilized in the ordinary gasoline engine in place of gasoline.

We hope to conduct experiments, in co-operation with gas engine manufacturers, to determine just what changes are necessary in the present gasoline engines to adapt them to the use of alcohol as a source of motive power; also to learn at what price per gallon the alcohol can be manufactured in this country from the waste materials of the farm, such as small and unsalable potatoes, poor grades of corn and barley, and even waste cornstalks, beet pulp and sawdust. There is no question but that alcohol can be used as a substitute for gasoline for various purposes, nor is there any doubt but that a great many of the products of the farm, now wasted, can be utilized for the production of alcohol.

The introduction of alcohol for technical purposes and its manufacture from the products of the American farms will open up new fields of labor. The farm houses will have all the modern improvements of city homes. They will be lighted by alcohol, the farmer's wife will cook the food without much labor, and the farmer will be able to apply this source of power to a great number of the drudgeries of the farm, and perhaps do his general farm work with alcohol motors instead of horses. In order that this may be accomplished it will be necessary to remove the tax from alcohol used for technical purposes, as the revenue tax is now nearly fourteen times the cost of manufacture. A bill for the removal of this tax was introduced at the last session of Congress by Congressman Charles S. Boutell, of Chicago.

We also expect to experiment with gas producer gas engines, using lignite coal, which is found in such abundance in North Dakota, where large irrigation projects are now under way and where it will be necessary to pump water for irrigation. Lignite coal seems to contain a greater percentage of gas than other coal. If a cheap power can be found for pumping in irrigation, for manufacturing and agricultural purposes in the Western country, it will cause great changes in its development and it will support millions of people where now an occasional cowboy is the sole inhabitant.

It will thus be noticed that the farm machinery investigations of the office of experiment stations of the Department of Agriculture have a large sphere of usefulness, and they may be of great service both to the farmers and farm implement manufacturers by conducting these experiments in an impartial way, by preparing useful information for the benefit of the farmers and by offering friendly suggestions to the manufacturers.

In order that we may accomplish the best results it is absolutely necessary that a spirit of friendly co-operation exist between the implement manufacturers and the Department of Agriculture.

One of the reasons why we appear before the members of this Association is that a correct idea of the scope of our work may be known to you from the beginning, in order that we may have your confidence and support.

Another matter that is merely suggestive for the consideration of this Association is the establishment of an agricultural implement museum and exhibit building in Washington, similar to those now existing in Berlin, Paris, Moscow and St. Petersburg. Such a collection would be of immense educational value, not only to our own people, but to the numerous foreigners who annually visit our national capitol. It would also be the means of preserving the handiwork of the American inventors of farm implements, who have done more for the development of this country than any other class of men, and who should surely rank in the honor and esteem of future generations, with our famous statesmen, generals and authors.

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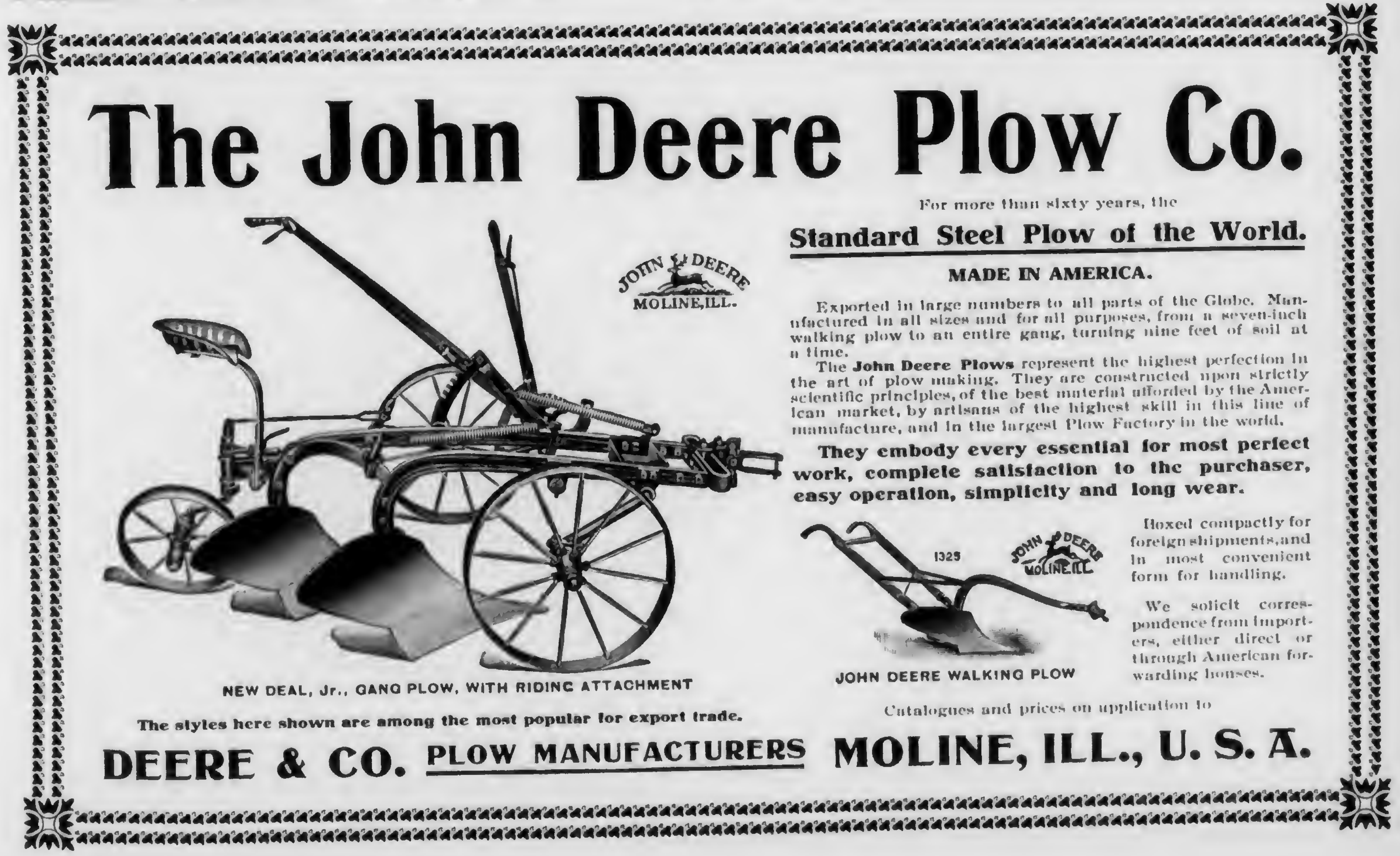
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But the collection of such an exhibit would be of still greater value to the present generation, in that it would afford an opportunity for domestic and foreign purchasers of agricultural implements, to study the types of implements manufactured; to make a comparison between the different makes of the same type, and to decide what ones would best meet the requirements of their particular locality. It is the opinion of the authorities in charge of the foreign implement museums referred to that these exhibits have done more for the introduction of modern implements in those countries than all other efforts combined.

If it should seem advisable to establish such an exhibit, it could only be done successfully by the co-operation of the American Association of Implement and Vehicle Manufacturers with the United States Government.

I hope that the best of "community of interest" spirit may always exist between this Association and the Department of Agriculture, and I thank you for your kind attention.

RECIPROCITY OR A DUAL TARIFF

Protection for American industries abroad would most aptly express the keynote of the remarkable reciprocity conference held at Chicago, August 16th and 17th. Whether that protection should be extended in the form of reciprocity treaties or by modifying the existing tariff so as to present maximum and minimum schedules offering advantages to the nations admitting our products on favorable terms and imposing penalties for those discriminating against us seemed to the practical members of the conference a matter of indifference so long as some form of protection was devised. The main object of the gathering was to put an end to the long period of Congressional neglect of the nation's foreign trade interests—to impress upon that body the fact that our export trade is in vital and increasing danger, that unless the foreign outlet for our surplus production in a score of lines is defended it may be cut off with inevitable economic disaster to the home market and to the entire mercantile and industrial community.

Reciprocity has seemed to many of those engaged in this country's export trade, and probably to the majority, the best practical means of opening new markets to our products and of strengthening our position in markets where we already have a foothold. To those who have no direct interest in foreign markets, either as manufacturers or producers of exportable commodities, reciprocity has borne on the other hand a threatening aspect as an entering wedge toward undermining the system of protective duties upon which the nation's splendid industrial prosperity is thought to be based. To a surprisingly large number of business men, both those whose interests lie primarily in the home market and who therefore have conceived reciprocity to be dangerous to them, and those who are interested in foreign markets, reciprocity has always seemed to be in the nature of an experiment. In point of fact it has been a factor in the commercial history of the United States for more than fifty years, and no nation in the world has given the plan more frequent or more instructive trials. From the negotiation of the reciprocity treaty with Canada, which went into effect March 16, 1855, to the present day, the United States has negotiated no less than 40 reciprocity treaties or agreements. Of these 17 failed of ratification at various times, while 23 went into effect. The cumulative experience of the results under these 23 trials of the reciprocity idea embraces an aggregate of eighty years during which the trade between this country and some foreign country has been more or less modified by reciprocity agreements. Thus, the Canadian treaty remained in force eleven years, and the statistics of these eleven years regarding the commerce between the United States and Canada furnish a solid basis upon which to decide whether in this instance reciprocity was beneficial or the reverse. The treaty with Hawaii remained in force fourteen years and the record of American-Hawaiian trade for these years, as compared with those preceding, shows the results of reciprocity in that case. The reciprocity agreements under Section 3 of the tariff of 1890 aggregated 13 in number and averaged two years in duration. The statistics of the results of these trials of the reciprocity idea form the most instructive basis possible for an intelligent conclusion as to whether reciprocity is or is not a valuable means of promoting and protecting our foreign trade. Unfortunately the test in this instance was too short to be wholly conclusive. In the main, however, the verdict as to these 15 trials must be favorable, although the Canadian treaty was too crude and unscientific to have survived much longer. The agreements actually signed under Section 3 of the tariff of 1897 were too trivial to repay statistical investigation; in fact, were so farcical as to seriously discredit the reciprocity idea in the minds of foreign statesmen—America seemed to them to be offering to remove the duties on acorns if they would take off the duties on chestnuts. The treaties negotiated under Section 4 of the tariff of 1897, and which failed with the defeat of the French treaty, were the most elaborate attempts in our commercial history to test the reciprocity idea, but the task of reconciling one group of interests to concessions made at its expense for the benefit of another group proved fatal, and seemed likely to remain a fatal stumbling block to similar negotiations in the future. The Cuban treaty, which has now been in effect nineteen months, seems to have been in the main a success.

The maximum and minimum tariff plan, in view of this practical difficulty in the way of framing a reciprocity treaty satisfactory to all branches of domestic industry, is appealing more and more strongly to intelligent business men. Some defense we emphatically must have if our exports are to hold their own in the era of universal tariff discrimination that is about to begin. In the minds of its framers the fourth section of the tariff of 1897 was intended to put in operation what would have virtually been a system of maximum and minimum tariffs, although the treaties negotiated under that clause have always been termed reciprocity treaties. Senator Cullom's assurance that Congress is disposed to see what can be done in behalf of our export interests by modifying our present tariff policy in the direction of the maximum and minimum tariff idea is therefore encouraging. American manufacturers and the vast agricultural interests of the West and Southwest whose interests in export markets now exceed a billion and a half annually are not concerned with the name or the form of Congressional support, they are only anxious that some form of protection should be devised—before it is too late—that will adequately defend and maintain the vast trade already secured and will serve in a reasonable degree to promote and extend it.

WORLD'S BIGGEST SHIP

The biggest ship in the world, the new Hamburg American liner "Amerika," made its initial transatlantic trip and arrived in New York recently. The advent of the "Amerika" has marked the introduction of many innovations in transatlantic travel, one of the new features being a restaurant, where meals will be served *a la carte* at all hours under the supervision of the Carlton Hotel, of London. The ship has a florist's shop, electric passenger elevators connecting the decks, a well-equipped gymnasium, stateroom telephone service, a nursery for children, trained nurses for the sick, and electric and hydropathic baths. Of course, the principal innovation is the *a la carte* restaurant. The idea for this enterprise was suggested by the grill room feature on the "Deutschland."

The "Amerika" has accommodations for a class of passengers to be known as "fourth class." She has accommodations for 3,057 passengers. Her crew complement being 520, she will thus, when full, have nearly 3,600 persons on board. In the first class division she has accommodations for 507, and in the second for 284. Then come a class entitled "intermediate," the number here provided for being 230; while lastly there is a "third" class department, which will accommodate no less than 2,036. One special point to be noted in connection with the steerage passengers is that they will never be berthed below the lower deck. Moreover, they will at certain times of the day have the use of the upper decks aft.

The "Amerika" has a length of 687 feet, a breadth of 74 feet 6 inches, and a depth of 53 feet. Her displacement is nearly 42,000 tons, while her gross tonnage is about 23,000 tons, and when loaded she carries over 16,000 tons of cargo. If the cargo of this vessel were placed on freight cars, standing end to end, these would extend over a distance of ten miles.

LAWN MOWERS FOR EXPORT

We are in receipt of an illustrated booklet published by Chadborn & Coldwell Mfg. Co., Newburgh, N. Y., U. S. A., and devoted to their line of lown mowers for export. This is the latest edition of the company's circular and price list, in which is illustrated the various patterns of lawn mowers manufactured by them.

The company have made a careful study during the thirty years they have been engaged in the manufacture of lawn mowers to adapt them to the peculiar conditions of soil and climate in order that they might be able to meet the requirements of every country, and therefore can be found to-day in every land where civilization exists.

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The company's export business is a very large department of their institution, and special care is taken in packing and shipping. Breakages are very seldom found when goods reach their destination.

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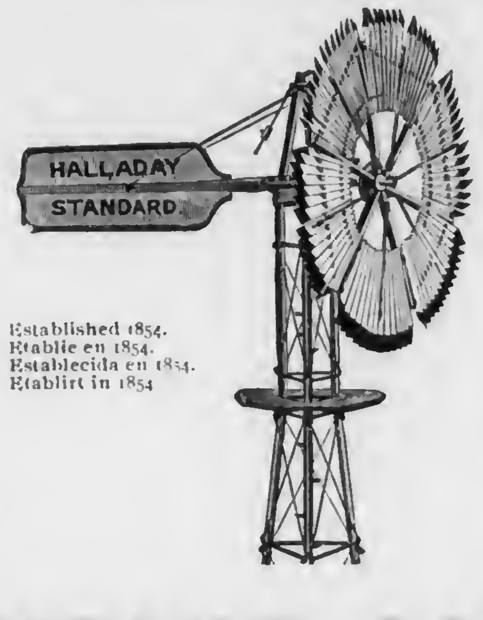

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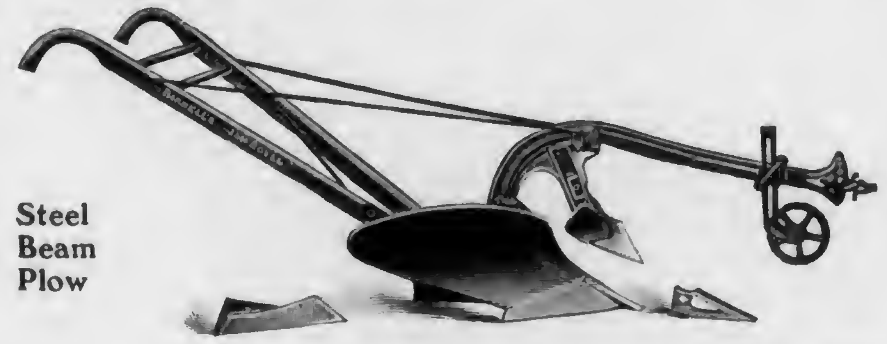

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THE PANAMA CANAL

Many years ago when the first great Pacific railroad was first discussed, many persons believed the movers in the project were half insane. It was not believed that so wild a scheme could possibly be executed. In a few brief years the great steam engines were drawing passengers and freight across the American Sahara and through the tunneled Rocky Mountains from the Atlantic to the Pacific Ocean, the longest distance being covered in a few days instead of months. The accomplishment of this prodigious feat carried civilization into the wilds of the Far West and has made the desert lands of that vast section blossom like a rose.

It was the beginning of the extermination of savages who refused to be civilized, and was the first fatal blow to Mormonism, which must ere long yield obedience to the laws of the land and abandon the sacrilegious practices through influences brought to Utah by the railroad. The building of that road has done much more, not the least of which is having made it possible to follow up the victory of Admiral Dewey through the Golden Gate at San Francisco. Without this road it would have been impossible to have transported troops and supplies rapidly enough to forward them by sea to maintain the authority of the United States in the far-away Philippines.

Every year it becomes more important in the development of the rich resources of the West. Its cost in treasury and the sacrifice of human life have long since been forgotten in counting the blessings to the nation it has secured.

We are again confronted by a Herculean terprise that holds within its possibilities even greater benefits than that of the building of the first great Pacific Railroad. The present enterprise is exceptional in that it is not likely to be multiplied by other canals being dug.

The embarkation of the Panama Canal Commission for that inhospitable Isthmus at this season of the year with daily reports of the prevalence of yellow fever and diseases indigenous to that tropical locality emphasizes in strong terms the indomitable courage and intensity of Americans in whatever they undertake. The men who compose that Commission are among the finest specimens of Americans.

Each in his own special line is a genius of the highest order, and all are so intensely loyal to all American enterprises that they know no such word as fail. Each appreciates keenly the hazard to his health, and that to enter upon his duty may be at the cost of his life, and yet each goes bravely forward to the stupendous work.

They seem little discouraged by the melancholy record of the French under De Lesseps. The innumerable difficulties that present themselves at the very threshold of the gigantic undertaking are perhaps the greatest that were ever attempted by man. But it will be accomplished, though not without tremendous sacrifice of life through the unhealthful influences which are almost insupportable by people from other than tropical climates.

The sanitary conditions, unwholesome fruits and vegetables—except for the useless natives whose energies are consumed by the heat—and the miasma of the swamps, are sources of great mortality. The natives will be of little use in the prosecution of the work, as they will not labor with their hands and are not intellectually equal to grappling with so voluminous a problem.

Therefore men for every place included in the execution of the plans must be brought from other lands, and it is easy to realize that, with the wisest provisions and most careful precautionary measures, there must be almost as many lives laid on the altar of the canal as there would be were we to undertake to invade a country with an army far in excess of the one now in the Philippines.

Just as many officers as men, in proportion to their numbers, must lay down their lives. Climate and disease have no respect of persons, and we shall lose a great many of our best and bravest. Men of the highest order of intellect and practical knowledge of their professions are soon to fall victims of disease and insanitation, while the laborers will doubtless die in great numbers, notwithstanding the wonderful provision for their care and the precautionary measures that are to be inaugurated at once.

In scope and future results to the whole world, the Panama Canal stands out conspicuously as perhaps the greatestproject ever conously as perhaps the greatest project ever con-of the twentieth century, and, like all other such conceptions, can only be carried out through the enpenditure of enormous sums of money, human strength and ingenuity.

Our French neighbors failed, and thus it is a matter of pride that we should succeed, and we will, if it costs many more millions than the present estimate and the lives of an army of men. The United States is pushing forward the wheels of progress and is fulfilling its mission in the cause of Christianity and civiliation grandly.—*Mrs. John A. Logan in New York Journal.*

REACHING THE NORTH POLE.

It may take time and the efforts of others to demonstrate whether or no Peter Nissen has left anything of scientific value in the ideas he entertained of traveling over land or water in a balloon-shaped apparatus such as that in which he lost his life in an attempt to cross Lake Michigan on Tuesday, November 29th last, says Orrin E. Dunlap in the *Scientific American.* Despite his failure to survive the journey, it is evident that an apparatus such as he designed will roll with the wind over land, water or ise, but it is too early in the history of the device to determine in what field it might prove serviceable or useful. Man has already devised and constructed so many things in which one may travel, that this infant of Nissen's has not yet found its place.

Considering that this adventure of Nissen's was the first of the kind man has ventured to make, it is to be regretted that he lost his life in the feat. It is reasonable to believe that he made the trip across Lake Michigan successfully, and that had aid been rendered him promptly on the Michigan shore, he would have lived to relate his experience. Even had the feat been performed at a season of the year when the weather conditions were more favorable for exposure, or more boats traveling up and down the lake, Nissen would in all likelihood be alive to-day. Recalling the stories told of sea serpents, it must be left to the imagination to conceive the story that a lake captain might have told had he been a witness of Nissen's strange craft rolling across the bow of his boat.

Peter Nissen believed his balloon-like apparatus had a value in connection with North Pole explorations. His first experiment with a rolling balloon pleased him. This first balloon was five feet long and three feet high. It had a shaft through its center, and on this he placed a car spring. He used a car spring because it was handy and convenient, and he felt it would slide from end to end, much the same as a man might move about. His experiments delighted him, and he decided to build the larger balloon, in the operation of which he lost his life.

This balloon was made of heavy canvas, and when inflated was 38 feet long and 22 feet in diameter. It had a porthole at each end, and through the center was a shaft about 12 feet long and 3 inches in diameter. This shaft was suspended from cords fastened around the inside, on exactly the same principle as the spokes in a wheel. On the shaft he arranged a sliding seat, so that he could move toward the ends, hoping in this way to steer the big ball by throwing one end up in the wind to cause it to swerve as he desired, as the high end would offer more surface to the wind. Suspended from the shaft and below the seat was a cradle or a boat, where he contemplated resting when fatigued from riding on the seat. A two-inch hose was run through one end of the balloon to furnish an air supply, a pump of his own invention being on the inside. "Fool-Killer No. 3" is the name he selected, he having previously built two boats for navigating the whirlpool rapids of Niagara, the first having been named "Fool-Killer No. 1," which was rebuilt and renamed "Fool-Killer No. 2." This latter boat was deserted and lost in the Niagara whirlpool on the evening of Thursday, October 17, 1901, after Nissen and a companion had floated helplessly about those rough waters for seven hours.

It was 3.10 P. M., November 29th, when Nissen called from the inside of his balloon to set her free. Thirty-five minutes later the balloon had passed from sight of those at the foot of Ohio street, Chicago, from which point the start was made. Late in the morning of the Thursday following, Mrs. Sophie Koehler, the wife of a farmer living near Stevensville, Mich., found Nissen's body on the lake shore, and 200 feet away was "Fool-Killer No. 3," torn and wrecked. The coroner's jury decided that Nissen died from exposure, the supposition being that he had made an effort to reach shore, but was too much exhausted. He left no message, all reports to the contrary notwithstanding. As to his experience on the trip and when he died, there is nothing certain; but as the air hose was broken, it aroused suspicion that his supply of fresh air was cut off at some point on the journey across Lake Michigan to eternity.

IMPORTANT CHANGE

We learn that S. H. Osmond, who has been established in the foreign field for many years, has joined forces with the Emerson Mfg. Co., Rockford, Ill., U. S. A., taking charge of their foreign department, with offices at 1 Ave. Montmorency, Asnieres-Seine, Paris, France.

Mr. Osmond is thoroughly experienced and well known in the foreign field and will without doubt succeed in his new undertaking. He intends sailing for the continent about November 1st.

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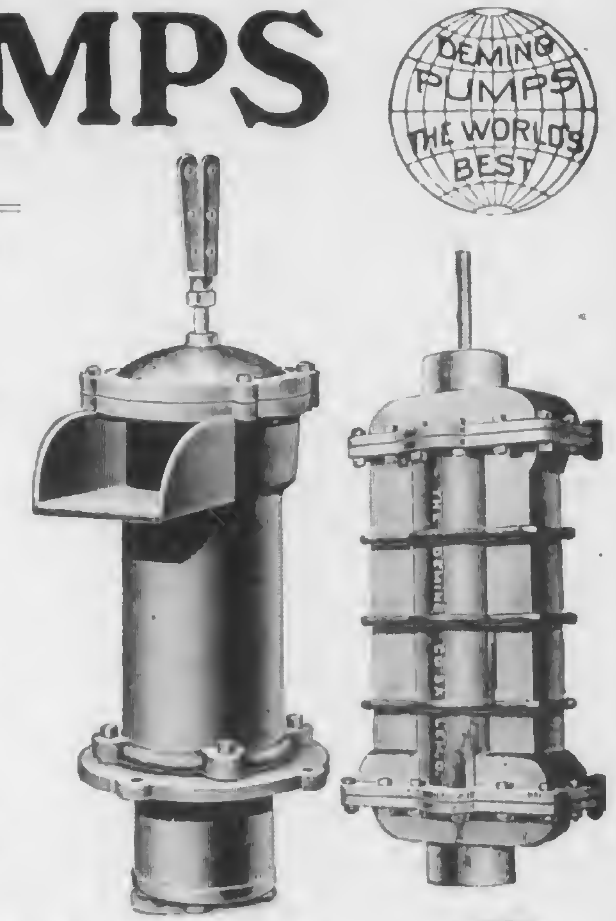

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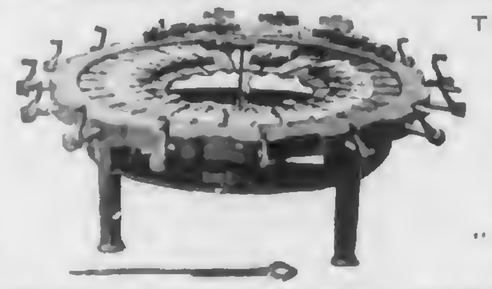

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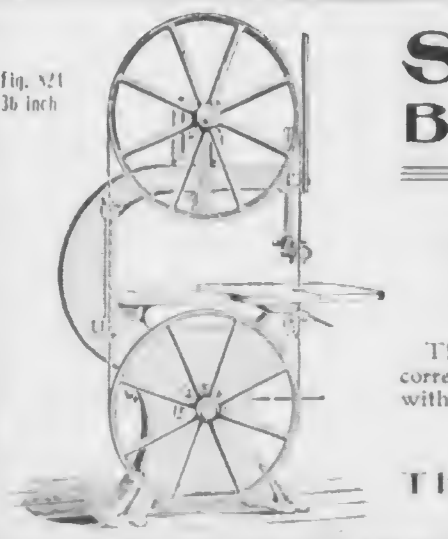

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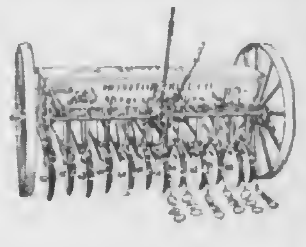

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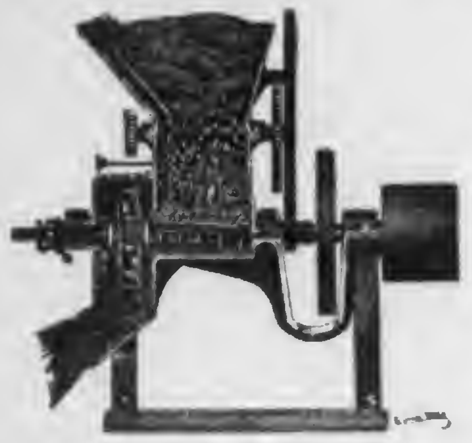

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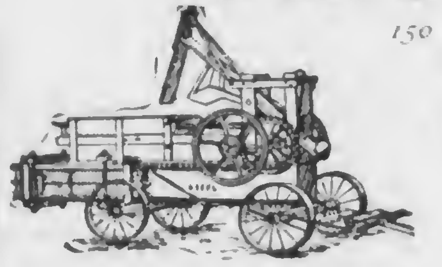

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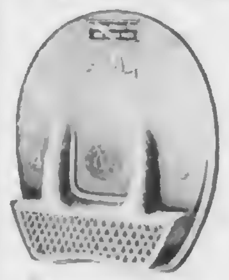

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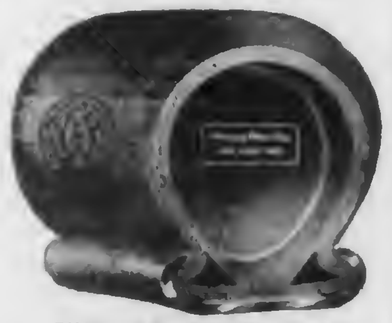

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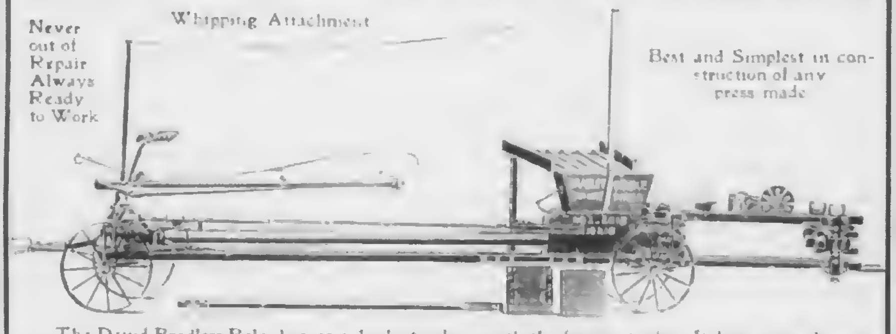

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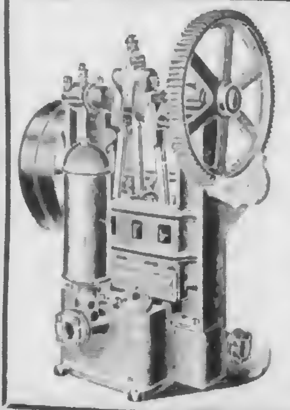

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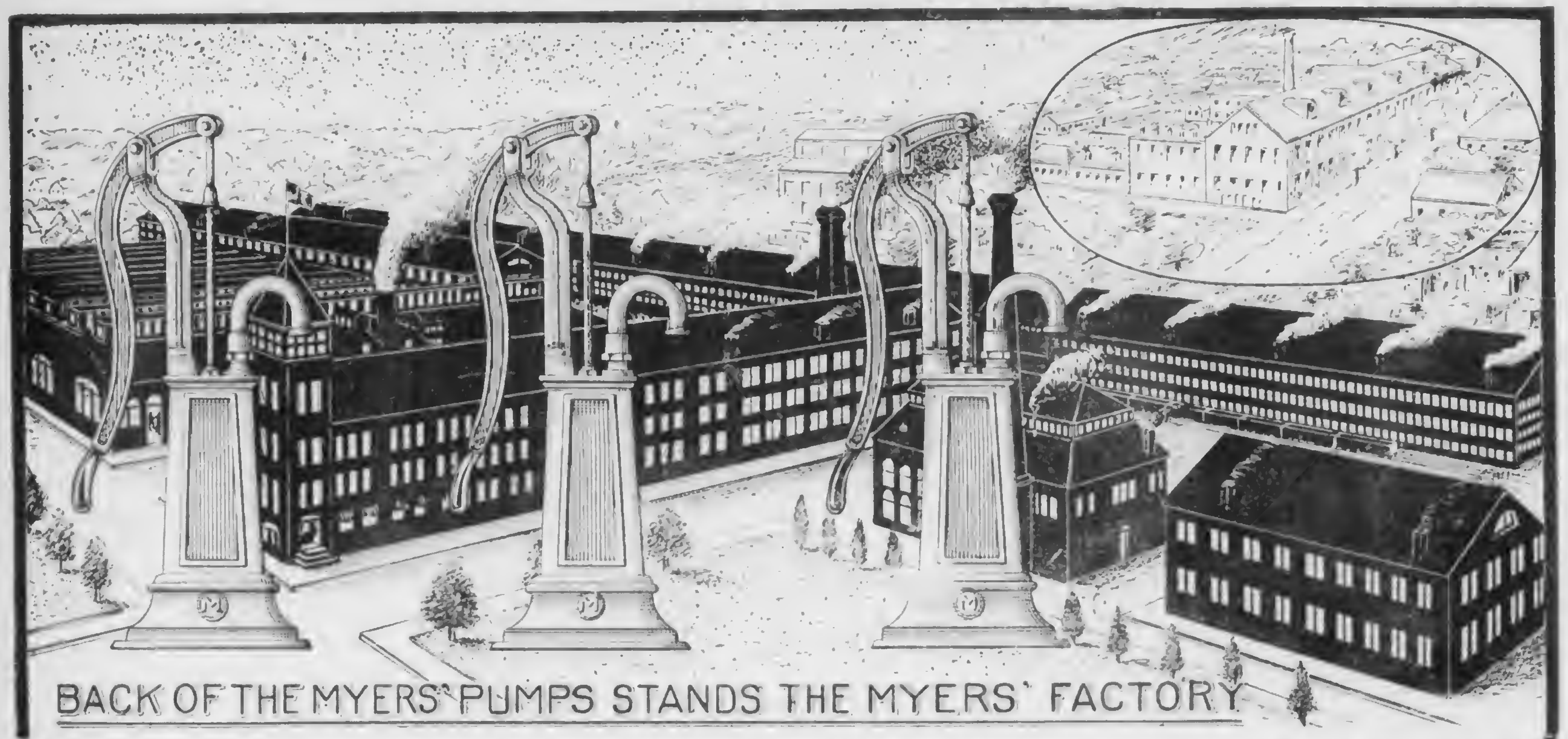
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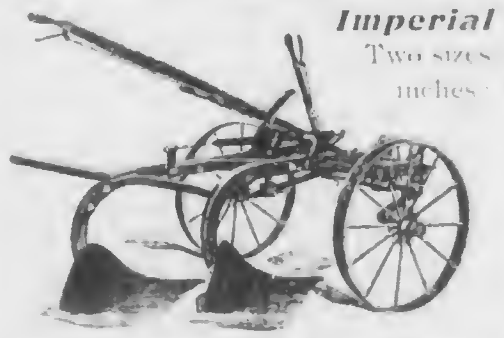
IMPERIAL LINE IMPLEMENTS

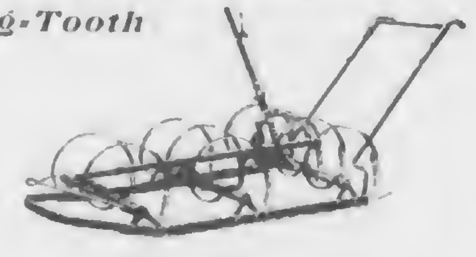


Imperial Stark Gang Plow
Two sizes, cutting 24 inches and 28 inches; all soft centre steel.

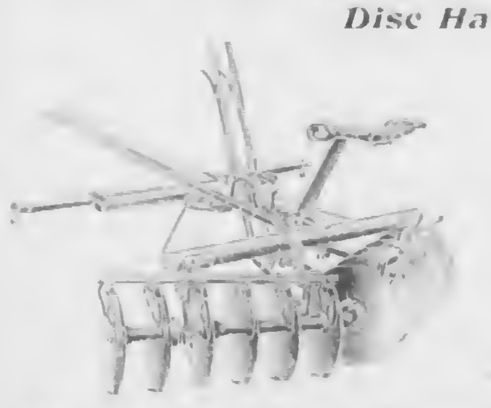
Specially constructed for export trade.

Imperial Spring-Tooth Cultivator

Specially designed for working in vineyards.



Solid and Cut-Out Disc Harrows.



Spring and Spike-Tooth Harrows.

Several sizes and styles.

Full Line Single and Double Furrow Plows, Cultivators, Etc.

CATALOGUE, No. 104 Free on Application.

THE BUCHER & GIBBS PLOW CO. B-21 Produce Exchange, NEW YORK, N. Y., U. S. A.
Factory: CANTON, OHIO.

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Ambulances
Carros de hospitál
Krankenwägen (Ambulanzen)

Fulton & Walker Co., Philadelphia, Pa.	29

Baling Presses (Hay, Straw, Etc.)
Presses à foin, paille, etc.
Prensas de Embalar (Heno, Paja, etc.)
Ballen Pressen (für Heu, Stroh, u. s. w.)

Bradley Mfg. Co., David, Bradley, Ill.	1
Collins Plow Co., Quincy, Ill.	29
Dederick Sons, P. K., Albany, N. Y.	36
Ertel Co., George, Quincy, Ill.	6

Beet Implements (Planting, Cultivating and Harvesting)
Betteraves (Instruments pour la culture des)
Instrumentos para el Cultivo de la Remolacha (Sembradoras, Cultivadoras y Cosechadoras)
Rübengeräte (zum Pflanzen, Pflügen und Ernten)

Moline Plow Co., Moline, Ill.	6

Binders, Self (Wheat, Rye, Oats, etc.)
Lieuses Automatiques (Blé, Orge, Avoine, etc.)
Agavilladoras Automáticas (Trigo, centeno avena, etc.)
Selbstbindemaschinen (für Weizen, Roggen, Hafer u. s. w.

Boilers.
Chaudières.
Calderas.
Kessel.

Leffel & Co., James, Springfield, Ohio	29

Bolts and Nuts.
Boulons et écrous.
Pernos y Tuercas.
Bolzen und Muttern (Mutterbolzen)

Columbus Bolt Works, Columbus, Ohio	36

Brakes (Vehicle)
Retrancas (Vehículo)
Frein (de Voiture)
Bremsen (für Fahrzeuge)

Potter Co., The Morgan, Fishkill on Hudson, N. Y.	5

Carriages
Voitures
Carruajes
Kaleschen und Wagen

Dapson & Wolf, Oneida, N. Y.	5
Studebaker Bros. Mfg. Co., South Bend, Ind.	31

Carriage Cloth
Wagentuch
Paño de carruaje
Drap de Voiture

Fairfield Rubber Co., The, Fairfield, Conn.	5

Carriage Materials
Articles pour voitures
Materials for Carriages
Wagenmaterial

Carts (Riding)
Charrettes (à siège)
Carretones (de Montar)
Frachtkarren (Reitkarren)

Dapson & Wolf, Oneida, N. Y.	5
D. F. Sargent & Son, Geneseo, Ill.	31

Cider and Wine Presses
Pressoirs à vin et à cidre
Prensas para Hacer Cidra y Vino
Kelterapparate für Wein und Apfelwein

Lansing Wheelbarrow Co., Lansing, Mich.	31

Clothes Washing Machines
Linge (machines à laver le)
Máquinas de Savar Ropa
Wäsche Waschmaschinen

"1900" Washer Co., Binghamton, N. Y.	35

Coal Cars
Charbon (wagons pour)
Carros para Carbón de Piedra
Kohlenwaggons

Lansing Wheelbarrow Co., Lansing, Mich.	31

Coal Shutes
Charbon (Dalles à)
Canales para Descargar Carbón de Piedra
Kohlen Lade-Rinnen

Lansing Wheelbarrow Co., Lansing, Mich.	31

Corn Crushers
Mais (Concasseurs de)
Trituradoras de Maiz
Mais Zerquetschmaschinen

Sprout, Waldron & Co., Muncy, Pa.	3

Corn Harvesters
Mais (Moissonneuses de)
Cosechadoras de Maiz
Mais Erntemaschinen

Standard Harrow Co., Utica, N. Y.	

Corn Huskers and Shredders
Mais (Instruments à enlever et à déchirer les bractées du)
Desgranadoras y Picadoras de Maiz
Mais Enthülsemaschinen und Auswerfapparate

Bradley Mfg. Co., David, Bradley, Ill.	1

Corn Planters (Hand)
Mais (Semoirs de, à main)
Sembradoras de Maiz (A Mano)
Maispflanzer (für Handbetrieb)

Ohio Cultivator Co., The, Bellevue, Ohio	88
Wiard Plow Co., Batavia, N. Y.	5

Corn Planters (Horse)
Mais (Semoirs de, à cheval)
Sembradoras de Maiz (para Caballo)
Mais Pflanzmaschinen (für Pferdebetrieb)

Avery Mfg. Co., Peoria, Ill.	[illegible]
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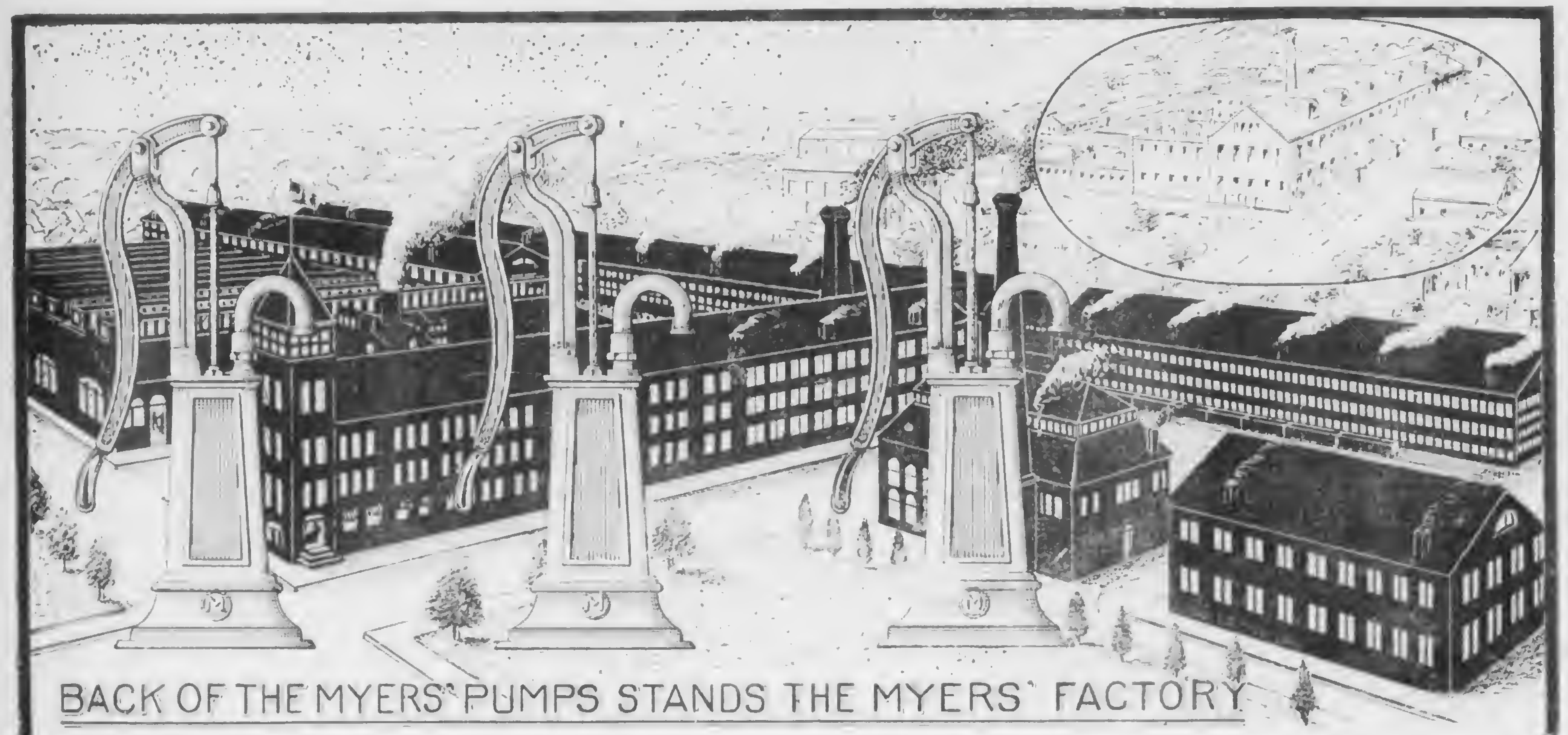
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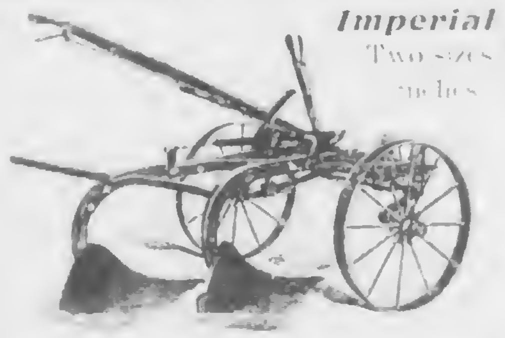

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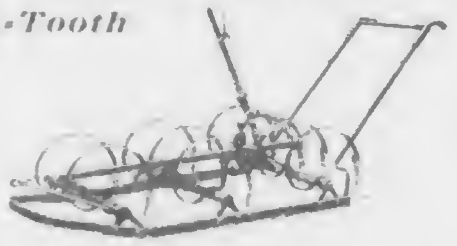
Specially designed for working in vineyards.



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Mais Pflanzmaschinen (für Pferdebetrieb)
Avery Mfg. Co., Peoria, Ill . . . . *
Bradley Mfg. Co., David, Bradley, Ill. 1
Moline Plow Co., Moline, Ill. 6

INTENTIONAL SECOND EXPOSURE

Corn Shellers (Hand)
Mais (Egrenoirs de, à main)
Descascaradoras de Maiz (de Mano)
Mais Pflanzmaschinen (für Handbetrieb)

Marseilles Mfg. Co., Marseilles, Ill.	4
Patch, A. H., Clarksville, Tenn.	5
Sprout, Waldron & Co., Muncy, Pa.	3
Standard Harrow Co., Utica, N. Y.	3
U. S. Wind Engine and Pump Co., Batavia, Ill.	33

Corn Shellers (Power)
Mais (**Egrenoirs de**), á énergie mecanique
Descascaradoras de Maiz (para Fuerza mecánica)
Mais Pflanzmaschinen für Pferdebetrieb)

Freeman & Sons Mfg. Co., S., Racine, Wis.	3
Marseilles Mfg. Co., Marseilles, Ill.	4
Patch, A. H., Clarksville, Tenn.	5
Sprout, Waldron & Co., Muncy, Pa.	3
Standard Harrow Co., Utica, N. Y.	3

Cotton Planters
Coton (Semoirs de)
Sembradoras de Algodón
Baumwoll Pflanzmaschinen

Ohio Cultivator Co., The, Bellevue, Ohio	33

Cultivating Machinery (Hand and Garden)
Culture du sol (Intruments pour la), á main et pour le jardin
Maquinaria Cultivadora (de Mano y para Huerta)
Garten Pflüge (für Handbetrieb)

Deere Plow Co., John, Moline, Ill.	31
Moline Plow Co., Moline, Ill.	6
Standard Harrow Co., Utica, N. Y.	3

Cultivating Machinery (Horse and Field)
Culture du sol (Instruments pour la), à cheval et pour le champ
Maqninaria Cultivadora (de Caballo y para el Campo)
Bodenkultur Geräte (für Pferdebetrieb)

Avery Mfg. Co., Peoria, Ill.	*
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Moline Plow Co., Moline, Ill.	6
Ohio Cultivator Co., The, Bellevue, Ohio	33
Standard Harrow Co., Utica, N. Y.	3

Engines and Boilers (Stationary)
Machines à vapeur et Chaudières (fixes)
Maquinas de Vapor y Calderas (Fijas)
Maschinen und Kessel (Stationär)

Leffel & Co., James, Springfield, Ohio	29

Engines (Traction and Portable)
Machines à vapeur (Pour la traction et transportables)
Máquinas (De Tracción y Portátiles)
Traktions- oder Zugmaschinen und Lokomobilen

Avery Mfg. Co., Peoria, Ill.	*

Feed and Ensilage Cutters
Coupe-aliments, coupe-ensilage
Cortadora de Forraje y Ensilaje
Futter- und Grünfutter (**Ensilage**) **Schneidemaschinen**

Freeman & Sons Mfg. Co., S., Racine, Wis.	3
Marseilles Mfg. Co., Marseilles, Ill.	4
Silver Mfg. Co., Salem Ohio	35

Feed Mills
Moulins pour aliments
Molinos de Frorraje ó Pienso
Futtermühlen

Sprout, Waldron & Co., Muncy, Pa.	3

Files (Letter and Card)
Systèmes de classification (lettres et cartes)
Guarda-Cartas y Tarjetas
Skripturenordner (für Briefe und Karten)

Forgings (Carriage)
Pièces forgées (Voiture)
Forjaduras (para carruajes)
Schmiedereien (Kaleschen-)

Gardening Tools (Hand)
Jardinage (**Outils de**) à main
Herramientas de Hortelano (de Mano)
Gärtnerei Handwerkzeug

Grain Cleaning Machinery (Rice, Coffee, Grain, Etc.)
Grains (**Machines à nettoyer les**): riz, café, grain, etc.
Maquinaria pare Limpiar Granos (Arroz, Café, Granos, Etc.)
Getreide Reinigungsmaschinen (für Reis, Kaffee, Korn, u. s. w.)

Sprout, Waldron & Co., Muncy, Pa.	3

Grain Drills
Grains (**Semoirs de**)
Sembradoras de Granos
Drillmaschinen

Bickford & Huffman Division, Macedon, N. Y.	36
Monitor Drill Co., Minneapolis, Minn.	35
Superior Drill Co., Springfield, Ohio	*

Grain Grinding Mills
Grains (**Moulins à moudre les**)
Molinos para Granos
Schrotmühlen

Flint & Walling Mfg. Co., Kendallville, Ind.	3
Freeman & Sons Mfg. Co., S., Racine, Wis.	3
Kelly Co., The O. S., Springfield, Ohio	36
Marseilles Mfg. Co., Marseilles, Ill.	4
Sprout, Waldron & Co., Muncy, Pa.	3
U. S. Wind Engine and Pump Co., Batavia, Ill.	33

Hand Carts (Push)
Charrettes à bras
Carretillas de Mano (de Empuje)
Hand-Schiebekarren

Bradley Mfg. Co., David, Bradley, Ill.	1
Deming Co., The, Salem, Ohio	35
Lansing Wheelbarrow Co., Lansing, Mich.	31

Hand Tools (Shovels, Rakes, Hoes, Scythes, Forks, Etc.)
Outils à main (Pelles, râteaux, houes, faux, fourches, etc.)
Herramientas de Mano (Palas, Rastrillos, Azadones, Guadañas. Horquillas, etc.)
Handwerkzeug (Schaufeln, Rechen, Haken, Sensen, Gabeln, u. s. w.

Harrows (Disc, Spring-Tooth and Spike-Tooth)
Herses (à disques, à dents élastiques, à dents droites)
Mielgas ó Rastrillos (de Disco, con Dientes de Resorte y Otros)
Eggen (mit Scheiben-, Federzahn- und Speichenzahn-Vorrichtung)

Bradley Mfg. Co., David, Bradley, Ill.	1
Bucher & Gibbs Plow Co., Canton, Ohio	2
Collins Plow Co., Quincy, Ill.	29
Deere Plow Co., John, Moline, Ill.	31
Moline Plow Co., Moline, Ill.	6
Ohio Cultivator Co., The, Bellevue, Ohio	33
Standard Harrow Co., Utica, N. Y.	3
Wiard Plow Co., Batavia, N. Y.	5

Hay Loaders
Foin (**Chargeuses de**)
Cargadoras de Heno
Heu Auflader

Marseilles Mfg. Co., Marseilles, Ill.	4

Hay Presses
Foin (**Presses à**)
Prensas para Heno
Heu Pressen

Bradley Mfg. Co., David, Bradley, Ill.	1
Collins Plow Co., Quincy, Ill.	29
Ertel Co., George, Quincy, Ill.	6
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Hay Rakes
Foin (**Râteaux à**)
Rastros para Heno
Heu Rechen

Bradley Mfg. Co., David, Bradley, Ill.	1
Moline Plow Co., Moline, Ill.	6
Wiard Plow Co., Batavia, N. Y.	5

Hay Tools (For Handling Hay)
Foin (**Outils** pour la manipulation du)
Herramientas para Heno (para Manipular el Heno)
Heubearbeitungs-Apparate und Werkzeuge

Myers, F. E. & Bro., Ashland, Ohio	2
U. S. Wind Engine and Pump Co., Batavia, Ill.	33

Hods (Steel and Wood)
Auges (Acier et bois)
Artesas de Cargar (de Acero y de Madera)
Tünchkübel (Mörteltröge, aus Stahl und Holz)

Lansing Wheelbarrow Co., Lansing, Mich.	31

Implement Parts (Rake, Teeth, Knife Sections, Etc.)
Pièces de rechange (Dents de râteaux, conteaux de faucheuses, etc.)
Partes de Instrumentos (Dientes de Rastrillo, Secciones de Cuchilla, Etc.)
Theile von Landwirthschaftsgeräthen (Rechenzähne, Messertheile, u. s. w.)

Incubators
Conveuses artificielles
Incubadoras
Brutmaschinen (Inkubatoren)

Ertel Co., George, Quincy, Ill.	6

Lawn Mowers
Tondeuses de gazon
Segadoras ó Cortadoras de Césped
Rasen Mähmaschinen

Clipper Lawn Mower Co., Dixon, Ill.	5
Chadborn & Coldwell Mfg. Co., Newburgh, N. Y.	1

Leather (Imitation)
Leder (Imitation)
Cuero (Imitación)
Cuir (Imitation)

Fairfield Rubber Co., The, Fairfield, Conn.	5

Machine Tools
Machines-outils
Herramientas Mecánicas
Maschinen-Werkzeug

Silver Mfg. Co., Salem, Ohio	35

Mowers.
Faucheuses.
Segadoras.
Mähmaschinen.

Mills (Corn and Hominy)
Moulins (pour maïs et bouilie)
Molinos (para Moler Maiz Fino y Grueso)
Mühlen (für Getreide und indianisches Reis, Hominy)

Sprout, Waldron & Co., Muncy, Pa.	3
Standard Harrow Co., Utica, N. Y.	3

Oil Cloth
Toile Cirée
Wachstuch

Plows (Walking, Riding and Disc)
Charrues (ordinaires, à siège, à disques)
Arados (de Caminar, de Moutar y de Disco)
Pflüge (Geh-, Fahr- und Scheibenpflüge)

Avery Mfg. Co., Peoria, Ill.	*
Bradley Mfg. Co., David, Bradley, Ill.	1
Bucher & Gibbs Plow Co., Canton, Ohio	2
Collins Plow Co., Quincy, Ill.	29
Deere Plow Co., John, Moline, Ill.	31
Moline Plow Co., Moline, Ill.	6
Ohio Cultivator Co., The, Bellevue, Ohio	33
Standard Harrow Co., Utica, N. Y.	3
Wiard Plow Co., Batavia, N. Y.	5

Potato Machinery
Pommes de terre (Machines pour la culture des)
Maquinaria para Patatas
Kartoffel-Maschinen

Bradley Mfg. Co., David, Bradley, Ill.	1
Moline Plow Co., Moline, Ill.	6
Standard Harrow Co., Utica, N. Y.	3

Pumps, Hand and Power (Lift, Force and Spray)
Pompes, à main, et à énergie mécanique (Pompes aspirantes, foulantes, pulvérisatrices)
Bompas de Mano y para Fuerza Mecánica (Aspirantes, de Forzar y de Rociar)
Pumpen, Hand- und Kraftpumpen (Hebe-, Druck- und Bespreugungs-Pumpen)

Deming Co., The, Salem, Ohio	35
Flint & Walling Mfg. Co., Kendallville, Ind.	3
Myers, F. E. & Bro., Ashland, Ohio	2
U. S. Wind Engine and Pump Co., Batavia, Ill.	33

Reapers.
Moissonneuses.
Cosechadoras
Getreide-Mähmaschinen.

Rollers (Field or Road)
Rouleaux (pour champs et pour routes)
Rodillos (para Campo y para Caminos)
Feld- und Weg-Walzen

Bradley Mfg. Co., David, Bradley, Ill.	1
Lansing Wheelbarrow Co., Lansing, Mich.	31
Ohio Cultivator Co., The, Bellevue, Ohio	33
Standard Harrow Co., Utica, N. Y.	3

Rubber Goods
Articles de caoutchouc
Articulos de Caucho
Gummiwaaren

Rubber Tires
Gummireifen
Bandes de roues en caoutchouc
Llantas de Caucho para Ruedas

Morgan & Wright, Chicago, Ill.	1

Scrapers (Road)
Ratissoires (pour routes)
Dragas (para Caminos)
Strassen Scharr-Maschinen (Strassen-Ebener)

Standard Harrow Co., Utica, N. Y.	3

Seeders, Broadcast (Grain and Grass)
Semoirs pour semer à la volée (Grain et graminées)
Máquinas de Sembrar Semillas al Vuelo (Granos y Semilla de Yerbas)
Breitsämaschinen (für Getreide und Gras)

Freeman & Sons Mfg. Co., S., Racine, Wis.	3

Sharpeners and Grinders
Machines à remoudre et à aiguiser
Afiladoras y Amoladoras
Schärfe- und Schleif-Apparate

Sleighs
Traineaux
Trineos
Schlitten

Dapson & Wolf, Oneida, N. Y.	5

Sprayers and Nozzles
Instruments d'arrosage
Rociadoras y Boquereles
Besprengungs-Spritzen und Uebernasen

Deming Co., The, Salem, Ohio	35
Flint & Walling Mfg. Co., Kendallville, Ind.	3
Myers, F. E. & Bro., Ashland, Ohio	2
Standard Harrow Co., Utica, N. Y.	3

Stalk Cutters
Coupe-chaume
Cortadoras de Tallos
Stengel Abschneider

Street Sprinklers
Arrosage des rues (Tonneaux pour l')
Regadoras de Calle
Strassen Bespreng-Wagen

Studebaker Bros. Mfg. Co., South Bend, Ind.	31

Sugar Cultivating Implements
Sucre (**Instruments pour la culture de la canne à**)
Instrumentos para el Cultivo Azucarero
Zucker-Anbau Geräthe

Threshing Machinery
Machines à battre
Maquinaria de Trillar
Dresch Maschinen

Avery Mfg. Co., Peoria, Ill.	*

Tire Setters
Machines à fixer les bandes de roues
Máquinas de Poner Llantas
Maschinen zum Aufsetzen von Gummireifen

Standard Tire Setter Co., Keokuk, Iowa	35

Tread Powers (Horse, Dog, Sheep, Etc.)
Machines à utiliser l'énergie de la marche (Cheval, Chien, Mouton, etc.)
Motores de Pisada (para Caballo, Perro, Carnero, etc.)
Kraft-Tretmaschinen (Pferde, Hunde, Schafe, u. s. w.)

Trucks (Hand Warehouse)
Trucs (Emmagasinage à bras)
Carretillas de Mano para almacén
Transport Handwagen (für Waarenhäuser)

Lansing Wheelbarrow Co. Lansing, Mich.	31

Wagons (Business)
Charettes (d'affaires)
Carros (para negocios)
Wägen (Geschäftswägen)

Fulton & Walker Co., Philadelphia, Pa. 29

Wagons and Buck-Wagons
Charrettes et charrettes à lessive
Carretones y Carretas
Wägen und Bockwägen

Ohio Valley Wagon Co., The, Marietta, Ohio . . . . . .

Wagons and Carts (Farm)
Wagonnets et charrettes (Ferme)
Carretones y Carretas (para Hacienda)
Landwirthschaftliche Wagen und Karren

Avery Mfg. Co., Peoria, Ill. . . . . *
Lansing Wheelbarrow Co., Lansing, Mich. 31
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Weeders
Sarcloirs mécaniques
Desyerbadoras
Jäte Maschinen

Standard Harrow Co., Utica, N. Y. 3
Wiard Plow Co., Batavia, N. Y. 5

Well Tools and Drilling Machinery
Outils pour puits et machines à forer
Instrumentos para Abrir Pozos y Maquinaria para Horadar
Brunnen-Werkzeug und Bohr-Maschinen

Flint & Walling Mfg. Co., Kendallville, Ind. 3

Wheelbarrows
Brouettes
Carretillas
Schiebekarren

Lansing Wheelbarrow Co., Lansing, Mich. 31

Wheels (Carriage)
Roues (Voiture)
Ruedas (Carruaje)
Räder (Kaleschen und Wagen)

Wheels and Wheel Materials
Roues et articles pour roues
Ruedas y Materiales para Ruedas
Räder und Rädermaterialien

Windmills (Towers and Tanks)
Moulins à vent (Tours et réservoirs)
Molinos de Viento (Torres y Tanques)
Windmühlen (Thurm- und Bütten)

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Freeman & Sons Mfg. Co., S., Racine, Wis. 3
Marseilles Mfg. Co., Marseilles, Ill. 4
U. S. Wind Engine and Pump Co., Batavia, Ill. 33

Wood Sawing Machinery
Bois (Machines à scierie)
Maquinaria para Aserar Madera
Holzsäge-Maschinen

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U. S. Wind Engine and Pump Co., Batavia, Ill. 33

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Myers & Bro., F. E., Ashland, Ohio 2

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Potter Co., Morgan, Fishkill-on-Hudson, N. Y. . 5

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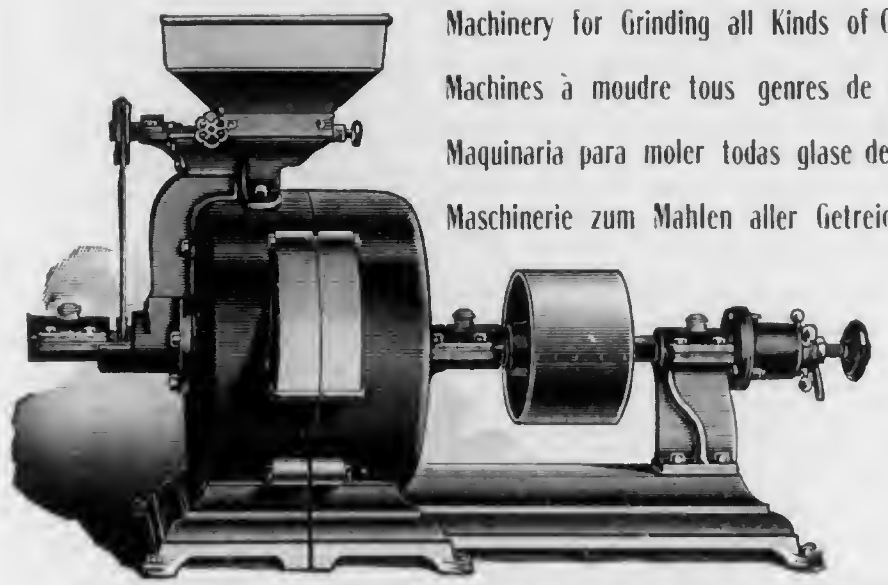
Standard Tire Setter Co., Keokuk, Iowa 35
Studebaker Bros. Mfg. Co., South Bend, Ind. . . . 31
Superior Drill Co., Springfield, Ohio . . . . *

U. S. Wind Engine and Pump Co., Batavia, Ill. . 33

. . . . Wiard Plow Co., Batavia, Y. N. 5



Machinery for Grinding all Kinds of Grain
Machines à moudre tous genres de grains
Maquinaria para moler todas glase de granos
Maschinerie zum Mahlen aller Getreidesorten

Write for one of our booklets which gives a full description of French Burr and Attrition, Feed and Meal Mills, Cotton Seed and Linseed Oil Cake Mills, Emery Rock Mills, Cotton, Ear and Ore Crushers, Magnetic Separators, Corn Shellers, etc.

Ecrivez pour un pamphlet contenant description détaillée de moulins à meules de France et à frottement, de moulins pour grains de cotton et de tourteaux de lin, de moulins à pierre d'émeri, de broyeurs d'épis et de minérais, de moulins magnétiques, d'écosseurs, etc.

Escríbasenos pidiendo uno de nuestros libritos, en que se da una completa descripción de nuestros Molinos de Piedra Francesa y de Roce, para Pienso y para Harina, Molinos de Semillas de Algodón, y para moler Tortas de Aceite de Semillas de Linaza, Molinos para Roca de Esmeril, Trituradoras de Algodón, Mazorcas y Minerales, Separedoras Magnéticas, Desgranadoras de Maiz, etc.

Man verlange eines unserer Büchlein, das volle Beschreibung unserer französischen Mahlsteine und Reibevorrichtung enthält, wie auch aller Futter-Vorrichtungen, Mehl-Mühlen, Baumwollensaamen- und Leinölsaamen Kuchen-Mühlen, Schmirgel-Bergmühlen, Baumwollen-, Aehren- und Erzzerstückelungs-Maschinen, magnetische Separatoren, Korn-Enthülsemaschinen, u. s. w.

SPROUT, WALDRON & CO.

Drawer M. MUNCY, PA., U. S. A.

The Standard Harrow Co.

UTICA, N. Y., U. S. A.

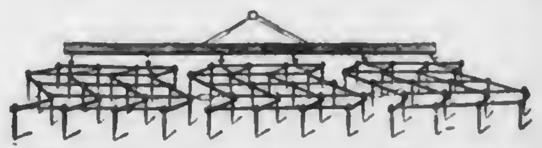
ABERDEEN, SR. SPRING-TOOTH HARROW

Unequalled Strength
No Clogging
Reversible Points on Teeth

THE STANDARD LINE includes one and two-section Spring-Tooth Harrows and all styles and sizes of Spike-tooth and Disc Harrows, Cultivating Implements, Potato Harvesters, Potato Sprayers, etc., and is one of the most favorably known lines in the leading agricultural countries.

We guarantee prompt service for all export orders. Our factory is only five hours' ride from New York City.

WRITE IN YOUR OWN LANGUAGE FOR CATALOGUE F



ZIG ZAG STEEL SPIKE-TOOTH HARROW

20-Tooth Sections
½-inch Teeth

Advertise your business through the columns of the Export Implement Age; it will pay you. Let us send you rates.

Write us for catalogue No. 34, illustrating and describing the **FREEMAN Windmills, Towers, Feed and Ensilage Cutters, Fodder Shredders, Overhead and Sweep Horse-Powers, Wood-Sawing Outfits, Corn Shellers, Grinding Mills, Fanning Mills, Broadcast Sowers, etc.**

Ecrivez-nous pour recevoir le catalogue No. 34 décrivant et donnant les vues des machines **FREEMAN**: Moulins à vent, tours, coupe-aliments et coupe-ensilages, machines à couper le fourrage, mécaniques en l'air et balayeuses à chevaux, outillages pour scierie-mécanique à bois, égrenoirs à maïs, moulins à moudre, moulins d'aérage, semoirs à la volée, etc.

Man schreibe uns und verlange Katalog No. 34, welcher die folgenden Freeman'schen Geräthe illustrirt und beschreibt: Windmotoren, Thürme, Futter- und Ensilagen-Schneidemaschinen, Futter Zerschneideapparate, überirdische- und Reinigungs-Pferdekräfte, Ausrüstungsapparate zum Holzsägen, Maisenthülser, Mahlmühlen, Kornschwingen und Schwingapparate, Breitwurfsäemaschinen, u. s. w.

Escribidnos pidiéndonos el Catalogo número Treinta y Cuatro, en que se ilustran con grabados y se describen los Molinos de Viento, Torres, Cortadoras de Pienso y de Ensilaje, Cortadoras de Forraje, Desmenuzadoras, Fuerza Motriz de arriba y de barrida, Habilitaciones para Aserrar Maderas, Descascaradoras de Maiz, Maquinas de Moler, Maquinas de Aventar, Sembradoras al Vuelo, etc., todo de fabricación y marca "Freeman."

S. FREEMAN & SONS MFG. CO., Racine, Wis., U. S. A.

A Windmill that does satisfactory work naturally is the one you want. The "STAR" is the one that pleases. Our booklets in English, German, French and Spanish tell all about

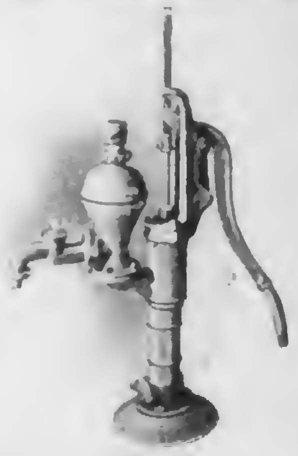
"STAR" WINDMILLS

designed for the heavy and varied work required of them abroad. The "STAR" is built in all sizes, thoroughly galvanized, has ball bearings and is the easiest running Mill made.

"STAR" PUMPING MILL

For many years we have been exporting Windmills and know what is needed to meet all requirements and please our foreign friends. We understand how these goods should be packed for safe delivery, and the packing receives our most careful attention. With all the required parts at hand and properly fitted it facilitates the assembling and erecting of the Mills.

We build **Hand and Windmill Pumps** of various designs, all sizes of **Pine, Cypress and Galvanized Steel Tanks, Galvanized Steel Towers** any height, **Power Windmills** for grinding feed and running light machinery and **Steel Substructures** all heights to support Tanks of any capacity.



CORRESPONDENCE INVITED

FLINT & WALLING MFG. CO. KENDALLVILLE Indiana, U. S. A.

New York Office, 96 Wall Street, New York, U. S. A.

Cable Address, "STAR," Kendallville, Ind. Codes "Lieber," "A B C, 4th edition," "Western Union" and "Private."

Wagons (Business)
Charettes (d'affaires)
Carros (para negocios)
Wägen (Geschäftswägen)
Fulton & Walker Co., Philadelphia, Pa. 29

Wagons and Buck-Wagons
Charrettes et charrettes à lessive
Carretones y Carretas
Wägen und Bockwägen
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Wagons and Carts (Farm)
Wagonnets et charrettes (Ferme)
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Weeders
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Desyerbadoras
Jäte Maschinen
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Wiard Plow Co., Batavia, N. Y. 5

Well Tools and Drilling Machinery
Outils pour puits et machines à forer
Instrumentos para Abrir Pozos y Maquinaria para Horadar
Brunnen-Werkzeug und Bohr-Maschinen
Flint & Walling Mfg. Co., Kendallville, Ind. 3

Wheelbarrows
Brouettes
Carretillas
Schiebekarren
Lansing Wheelbarrow Co., Lansing, Mich. 31

Wheels (Carriage)
Roues (Voiture)
Ruedas (Carruaje)
Räder (Kaleschen und Wagen)

Wheels and Wheel Materials
Roues et articles pour roues
Ruedas y Materiales para Ruedas
Räder und Rädermaterialien

Windmills (Towers and Tanks)
Moulins à vent (Tours et réservoirs)
Molinos de Viento (Torres y Tanques)
Windmühlen (Thurm- und Bütten)
Flint & Walling Mfg. Co., Kendallville, Ind. 3
Freeman & Sons Mfg. Co., S., Racine, Wis. 3
Marseilles Mfg. Co., Marseilles, Ill. 4
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Bois (Machines à scierle)
Maquinaria para Aserar Madera
Holzsäge-Maschinen
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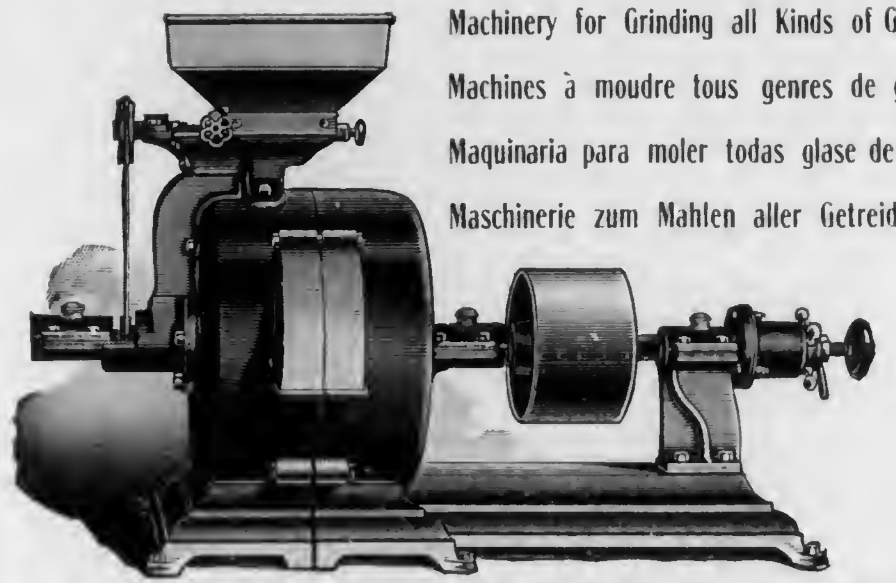

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Machines à moudre tous genres de grains

Maquinaria para moler todas glase de granos

Maschinerie zum Mahlen aller Getreidesorten

Write for one of our booklets which gives a full description of French Burr and Attrition, Feed and Meal Mills, Cotton Seed and Linseed Oil Cake Mills, Emery Rock Mills, Cotton, Ear and Ore Crushers, Magnetic Separators, Corn Shellers, etc.

Ecrivez pour un pamphlet contenant description détaillée de moulins à meules de France et à frottement, de moulins pour grains de cotton et de tourteaux de lin, de moulins à pierre d'émeri, de broyeurs d'épis et de minérais, de moulins magnétiques, d'écosseurs, etc.

Escríbasenos pidiendo uno de nuestros libritos, en que se da una completa descripción de nuestros Molinos de Piedra Francesa y de Roce, para Pienso y para Harina, Molinos de Semillas de Algodón, y para moler Tortas de Aceite de Semillas de Linaza, Molinos para Roca de Esmeril, Trituradoras de Algodón, Mazorcas y Minerales, Separedoras Magnéticas, Desgranadoras de Maiz, etc.

Man verlange eines unserer Büchlein, das volle Beschreibung unserer französischen Mahlsteine und Reibevorrichtung enthält, wie auch aller Futter-Vorrichtungen, Mehl-Mühlen, Baumwollensaamen- und Leinölsaamen Kuchen-Mühlen, Schmirgel-Bergmühlen, Baumwollen-, Aehren- und Erzzerstückelungs-Maschinen, magnetische Separatoren, Korn-Enthülsemaschinen, u. s. w.

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The Standard Harrow Co.

UTICA, N. Y., U. S. A.

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Unequalled Strength

No Clogging

Reversible Points on Teeth

THE STANDARD LINE includes one and two-section Spring-Tooth Harrows and all styles and sizes of Spike-tooth and Disc Harrows, Cultivating Implements, Potato Harvesters, Potato Sprayers, etc., and is one of the most favorably known lines in the leading agricultural countries.

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ZIG ZAG STEEL SPIKE-TOOTH HARROW

20-Tooth Sections
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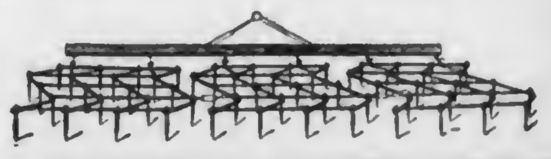

Advertise your business through the columns of the Export Implement Age; it will pay you. Let us send you rates.

Write us for catalogue No. 34, illustrating and describing the **FREEMAN Windmills, Towers, Feed and Ensilage Cutters, Fodder Shredders, Overhead and Sweep, Horse-Powers, Wood-Sawing Outfits, Corn Shellers, Grinding Mills, Fanning Mills, Broadcast Sowers, etc.**

Ecrivez-nous pour recevoir le catalogue No. 34 décrivant et donnant les vues des machines **FREEMAN:** Moulins à vent, tours, coupe-aliments et coupe-ensilages, machines à couper le fourrage, mécaniques en l'aiv et balayeuses à chevaux, outillages pour scierie-mécanique à bois, égrenoirs à maïs, moulins à moudre, moulins d'aérage, semoirs à la volée, etc.

Man schreibe uns und verlange Katalog No. 34, welcher die folgenden Freeman'schen Geräthe illustrirt und beschreibt: Windmotoren, Thürme, Futter- und Ensilagen-Schneidemaschinen, Futter Zerschneideapparate, überirdische und Reinigungs-Pferdekräfte, Ausrüstungsapparate zum Holzsägen, Maisenthülser, Mahlmühlen, Kornschwingen und Schwingapparate, Breitwurfsäemaschinen, u. s. w.

Escribidnos pidiéndonos el Catalogo número Treinta y Cuatro, en que se ilustran con grabados y se describen los Molinos de Viento, Torres, Cortadoras de Pienso y de Ensilaje, Cortadoras de Forraje, Desmenuzadoras, Fuerza Motriz de arriba y de barrida, Habilitaciones para Aserrar Maderas, Descascaradoras de Maiz, Maquinas de Moler, Maquinas de Aventar, Sembradoras al Vuelo, etc., todo de fabricación y marca "Freeman."

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A Windmill that does satisfactory work naturally is the one you want. The "STAR" is the one that pleases. Our booklets in English, German, French and Spanish tell all about

"STAR" WINDMILLS

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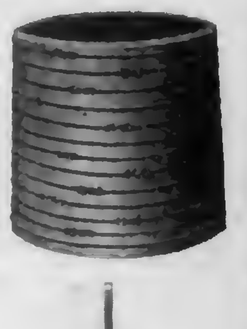

For many years we have been exporting Windmills and know what is needed to meet all requirements and please our foreign friends. We understand how these goods should be packed for safe delivery, and the packing receives our most careful attention. With all the required parts at hand and properly fitted it facilitates the assembling and erecting of the Mills.

We build **Hand and Windmill Pumps** of various designs, all sizes of **Pine, Cypress** and **Galvanized Steel Tanks, Galvanized Steel Towers** any height **Power Windmills** for grinding feed and running light machinery and **Steel Substructures** all heights, to support Tanks of any capacity.

"STAR" PUMPING MILL

CORRESPONDENCE INVITED

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New York Office, 96 Wall Street, New York, U. S. A.

Cable Address, "STAR," Kendallville, Ind. Codes, "Lieber," "A B C, 4th edition," "Western Union" and "Private."

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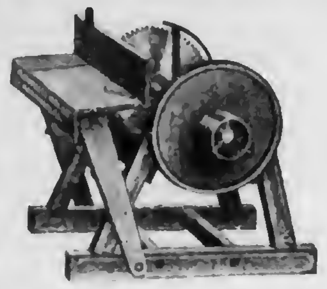
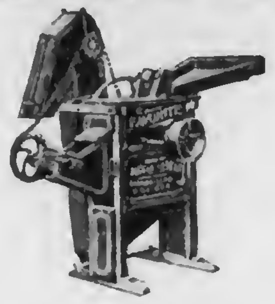
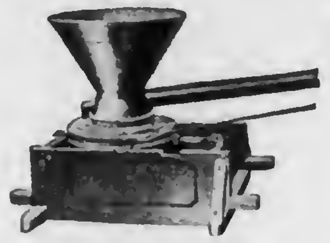
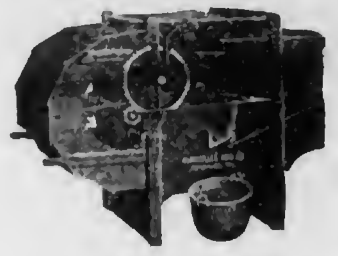

WOOD SAWS.
Steel or wood frames.


TWO HOLE HAND CORN SHELLER.


FEED GRINDERS
Sweep or geared.

HAND SHELLER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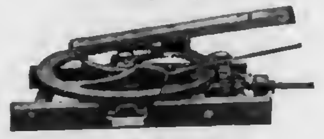
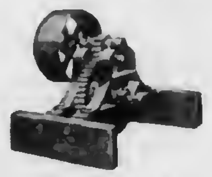
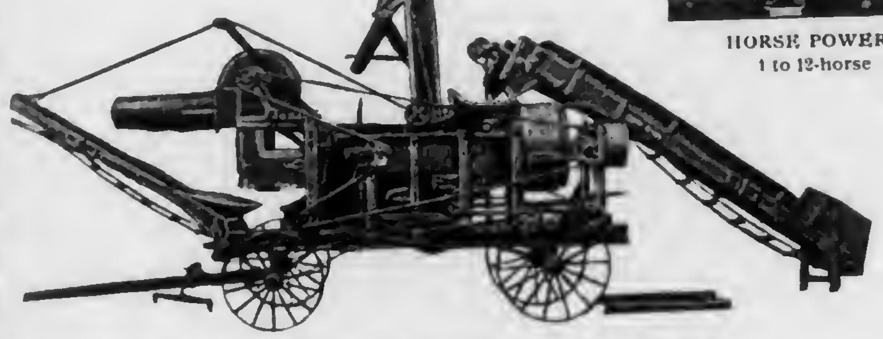
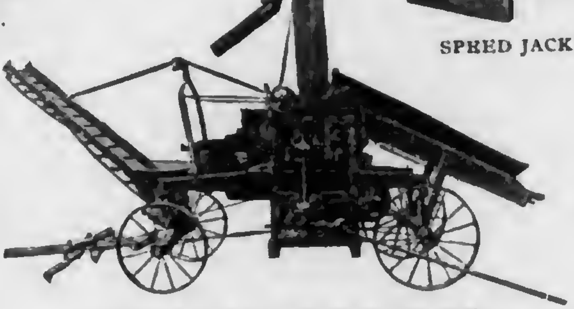

HORSE POWERS.
1 to 12-horse


SPEED JACKS.


NEW PROCESS DUSTLESS CYLINDER CORN SHELLER
For husked or unhusked corn, made in three sizes, capacities ranging from 400 to 1,200 bushels per hour.


CYCLONE COMBINATION FORCE FEED CORN SHELLER
All sizes and styles for horse power or engine.

PUMPING JACKS

Address **MARSEILLES MF'G. CO. MARSEILLES, ILL. U.S.A.** CABLE ADDRESS { A.B.C. Code "ADAMS MARSEILLES" / Western Union Code "ADAMS"

Extend your trade beyond the seas

AMERICAN manufactures are not only in demand, but in many cases are given the preference in foreign countries. Especially is this true of Agricultural Machinery, Farm Supplies, Vehicles and Hardware Specialties. If you are manufacturing any of these goods voice it abroad and make the world your field. You can do it just as easily as you can secure home trade if you'll talk through the

Export Implement Age

IT REACHES ALL FOREIGN COUNTRIES
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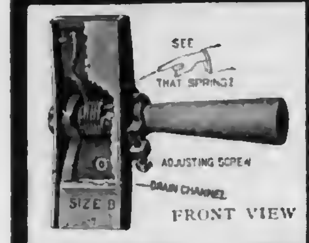


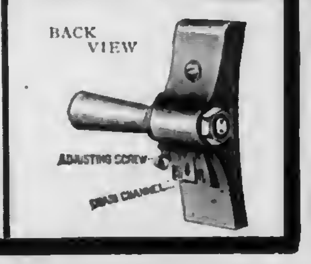
FRONT VIEW

POTTER'S SPRING BRAKE BLOCKS . . .

Very substantial. Over 25,000 sets in use throughout the United States. We make them for Steel Tires, and they are especially adapted for Rubber Tires.

Will Not Injure Rubber Tire a Particle

We solicit your correspondence


BACK VIEW

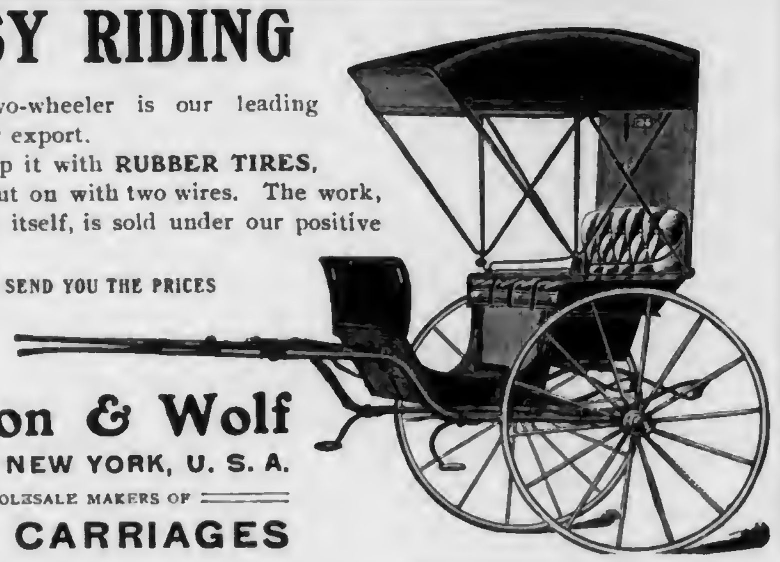
The Morgan Potter Company
FISHKILL-ON-HUDSON, N. Y., U. S. A.

EASY RIDING

This two-wheeler is our leading specialty for export.

We equip it with **RUBBER TIRES**, if desired, put on with two wires. The work, like the job itself, is sold under our positive guarantee.

LET US SEND YOU THE PRICES



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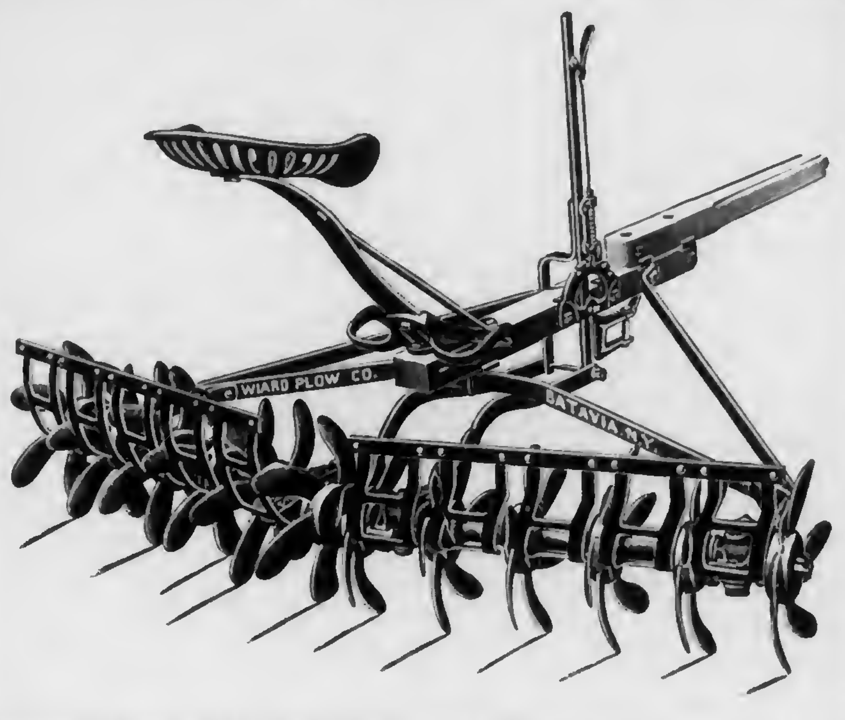
ONEIDA, NEW YORK, U. S. A.
WHOLESALE MAKERS OF
FINE CARRIAGES


WIARD PLOW CO.
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The World-famous Pulverizers,
The Morgan Pat. Spading Harrow, and Disc Harrow.
Plows of all Kinds and Sizes.
Other Standard Implements.

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Batavia, N. Y., U. S. A.

THE FAIRFIELD RUBBER CO.

Manufacturers of

Carriage Cloth, Imitation Leather, Etc.

FAIRFIELD, CONN., U. S. A.

We believe you will find our cloths more desirable fabrics than have been presented for your consideration.

Not only do we offer our lines as superior to any, but some are special with us.

We warrant all our goods in every manner, and in all climates.

All we ask is a trial of our productions, as we know the result will be in our favor.

Our many years' connection with the foreign trade places us in a position to know fully as to their wants, and the large orders we receive from that field convinces us that the high standard at which we have kept our goods is appreciated. We refer with pleasure to any leading Export house in New York as to the merit of our cloths.

Send for quotations through any Export house, or write us direct.

When ordering goods in our line, ask for goods made by

The Fairfield Rubber Co.

The Export Implement Age

is an independent journal devoted exclusively to the Export Trade in Agricultural Machinery, Pumps, Wind Mills, Farm Tools, Dairy Supplies and Hardware Specialties.

Advertising Rates Furnished Upon Application

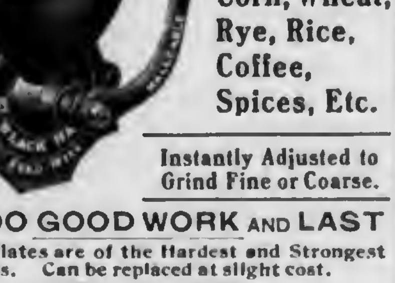
CLIPPER LAWN MOWER CO. DIXON ILLINOIS

THE MOWER that will **kill all the Weeds in your Lawns.** If you keep the weeds cut so they do not go to seed, and cut your grass without breaking the small feeders of roots, the grass will become thick and the weeds will disappear.

THE CLIPPER WILL DO IT
Ask Your Dealer for Them

Black Hawk Mill

Wgt 17 Lbs.



GRINDS
Corn, Wheat, Rye, Rice, Coffee, Spices, Etc.

Instantly Adjusted to Grind Fine or Coarse.

WILL DO GOOD WORK AND LAST

Grinding Plates are of the Hardest and Strongest Metals. Can be replaced at slight cost.

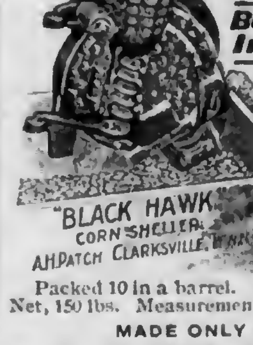
Packed in barrels of 12 each. Gross weight, 240 lbs.; net, 204 lbs. Measurement 6¼ cubic feet.

A. H. PATCH, *Sole Maker,*
Clarksville, Tenn., U. S. A.

Order through any Reliable Commission House.

PATCH'S PATENT
Black Hawk Corn Sheller

Wgt. 15 lbs.



SHELLS FAST.
SHELLS CLEAN.
SHELLS EASILY.

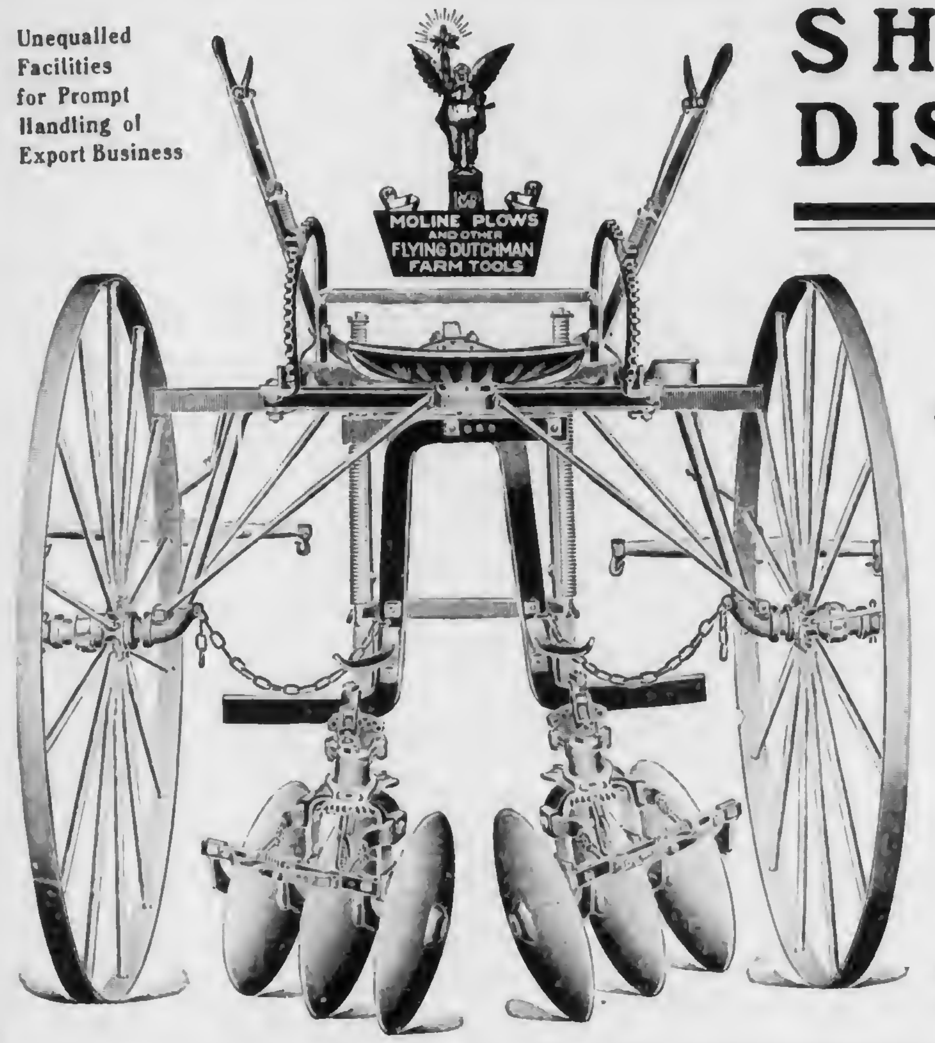
Beware of Imitations

Capacity 8 to 12 bushels ear corn per hour.

Packed 10 in a barrel. Gross, 180 lbs.; Net, 150 lbs. Measurement 6¼ cubic feet.

MADE ONLY BY
A. H. PATCH, CLARKSVILLE, TENN., U. S. A.

Unequalled
Facilities
for Prompt
Handling of
Export Business



SHANGHAI KIDD
DISC CULTIVATOR

Forty-six inches from lowest point of arch to the ground. Adjustable in width from 48 to 72 inches. Popular for cultivating Corn, Cane, Tobacco, etc. Packed for export, weighs 830 pounds. Occupies 25 cubic feet of space.

STALK CUTTERS, WALKING AND RIDING PLOWS, DISC PLOWS, DISC HARROWS, PIPE-LEVER HARROWS, CORN PLANTERS AND DRILLS, LISTERS, COTTON PLANTERS, CULTIVATORS—BEET SEEDERS, CULTIVATORS *and* PULLERS

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FRONT VIEW
VUE DE FACE
VISTA DEL FRENTE
VORDERANSICHT

37 YEARS building hay, straw, wool, cotton and corn fodder presses should certainly make us experts, and we claim that our presses are the simplest, easiest draught on the team and the smoothest balers on the market to-day.
Our presses will bale from 10 to 18 tons a day in hay.
Our presses will bale from 10 to 15 tons a day in straw.

Depuis 37 années que nous construisons des presses à foin, à paille, à laine, à coton, à fourrage de maïs, nous avons indubitablement acquis une expérience qui a fait de nous des experts, et nous n'hésitons pas à dire que nos presses sont les plus simples qui soient aujourd'hui sur le marché et celles qui fatiguent le moins l'attelage et fonctionnent le plus aisément.
Nos presses emballottent de 10 à 18 tonnes de foin par jour.
Nos presses emballottent de 10 à 15 tonnes de paille par jour.

Despues de 37 años que construimos prensas para heno, paja, lana, algodón y forraje de maíz tenemos que ser expertos en ese ramo, y por lo tanto reclamamos que nuestras prensas son las más simples y las más livianas para el acarreo por parejas de caballos, y las enfardadadoras mejores que existen hoy en el mercado.
Nuestras prensas enfardan de 10 á 18 toneladas de heno por dia.
Nuestras prensas enfardan de 10 á 15 toneladas de paja por dia.

37 Jahre ununterbrochener Fabrikation von Heupressen, Strohpressen, Wolle- und Baumwollenpressen, wie auch Maisfutter-Pressen, sollte uns wahrlich in den Stand gesetzt haben, Experten dieser Branche geworden zu sein; wir beanspruchen deshalb für unsere Pressen, dass sie die einfachsten in Konstruktion sind, beim Gespann den leichtesten Zug haben und zum Emballiren die vorzüglichsten Dienste leisten. Unsere Pressen sind im Stande 10 bis 18 "Tonnengehalt" Heu und 10 bis 15 "Tonnengehalt" Stroh täglich zu emballiren.

Catalogue free
Catalogue franco sur demande
Catálogo Gratis
Kataloge frei

Our "Gem" Full Circle

We make a line of both Full Circle and Half Circle Presses.
Prices, f. o. b. cars New York City, on our Gem Full Circle Balers, properly crated for export:

	Net Weight.	Gross Weight.	Space	Prices.
14 x 18 Baler	2,650 (1,457 Kilos)	3,700	115 cubic feet	$215.25 (£44 16.10)
16 x 18 Baler	2,775 (1,526 Kilos)	3,800	171 cubic feet	218.00 (£45. 8. 4)
17 x 22 Baler	2,975 (1,636 Kilos)	4,000	120 cubic feet	221.50 (£46. 3. 0)

Notre presse "Gem" à cercle entier

Nous fabriquons un assortiment de presses à demi-cercle et à cercle entier.
Prix de nos presses "Gem" à cercle entier, mises en wagon à New York et convenablement emballées pour l'exportation:

	Poids net.	Poids brut.	Espace.	Prix.
Presse 14 x 18	2,650 (1,457 kilos)	3,700	115 pieds cubes	$215.25 (£44.16.10)
Presse 16 x 18	2,775 (1,526 kilos)	3,800	171 pieds cubes	218.00 (£45. 8. 4)
Presse 17 x 22	2,975 (1,636 kilos)	4,000	120 pieds cubes	221.50 (£46. 3. 0)

Nuestra Prensa "Gem" Circulo Entero

Nosotros fabricamos un surtido completo de prensas tanto de medio círculo como de círculo entero. Los precios de embarque de la Prensa "Gem" son franco á bordo de los carros hasta New York, y se empaquetan con seguridad para exportarlas.

	Peso Bruto.	Neto.	Espacio.	Precio.
Prensa 14 x 18	2,650 (1,457 Kilos)	3,700	115 piés cúbicos	$215.25 (£44.16.10)
Prensa 16 x 18	2,775 (1,526 Kilos)	3,800	171 piés cúbicos	218.00 (£45. 8. 4)
Prensa 17 x 22	2,975 (1,636 Kilos)	4,000	120 piés cúbicos	221.50 (£46. 3. 0)

Unsere Voll-Zirkel "Gem" Presse.

Wir fabriziren ein Assortiment von Voll- und Halbzirkel-Pressen.
Preise unserer Vollzirkel Emballage-Pressen, frei Board New York, fertig für den Exportversand verpackt:

	Nettogewicht.	Bruttogewicht.	Rauminhalt.	Preise.
14 x 18 Presse	2,650 (1,457 Kilo)	3,700	115 Kubikfuss	$215.25 (£44.16.10)
16 x 18 Presse	2,775 (1,526 Kilo)	3,800	171 Kubikfuss	218.00 (£45. 8. 4)
17 x 22 Presse	2,975 (1,636 Kilo)	4,000	120 Kubikfuss	221.50 (£46. 3. 0)

GEO. ERTEL CO. - 592 Kentucky Street, Quincy, Ill., U. S. A.

EXPORT IMPLEMENT AGE

Vol. XIII. Philadelphia, Pa., U. S. A., November, 1905. No. 2.

TENDENCY OF RURAL ENGINEERING, WITH SPECIAL REFERENCE TO FARM MECHANICS

[An address by PROF. JOHN W. GILMORE, of Cornell University, delivered before the National Association of Agricultural Implement and Vehicle Manufacturers

A city minister, once visiting a professor of agriculture upon his farm, said: "What an advantage you have in being able to work with your hands. I can do nothing with mine but play golf." This sentiment exposes the kernel of the problems of the present-day education. Not that golf or any other game is an essential counterpart of a man's bread-winning activities, but rather that our method of education and subjects for training must be linked with the activities of every-day life and accomplishment. Time was when only Greek, Latin and "natural philosophy" were fit subjects for training the minds of men, and the minds of women could not even be trained by these; but now we look upon every honorable activity of life as a fit subject for mental training and discipline when put into pedagogic form. Our methods and principles in teaching and training must be cast in terms of the daily experiences of men. The lawyer must be trained in the terms and applications of the law, the agriculturist must be in command of the principles of plant and animal life and the practices of estate management. So, too, the implement and vehicle manufacturer requires for the greatest satisfaction in his work not only a broad understanding of the principles of mechanical design and construction, but also an intimate knowledge of road, soils and crops with which his products are to come into service. That training may be obtained by and for the major purposes and activities in life is as conceivable in education as the prototype of this conception is in our government.

Prof. JOHN W. GILMORE

But what has the manufacture and use of agricultural machinery done that it merits a place in the curriculum of the agricultural college? Of course the plow is as old as the hills, but there are many of us who can remember when the first reaper, binder, mower, hay rake, thresher and manure spreader found their places upon the farms, and for some of these machines the time does not date far back when they made their appearance. We have no published record prior to 1850 regarding the manufacture of agricultural implements. The following figures are interesting as showing the trend of the industry:[1]

BY HAND.

Yield Per acre	Year	Time (Hours)	Cost of Labor
Barley, 30 bushels	1829	63.35	$3.60
Timothy, one ton	1850	21.5	1.75
Oats, 40 bushels	1830	66.15	3.73
Wheat, 20 bushels	1847	64.15	3.71
Corn, 28 bushels	1855	127.52	10.01
Rice, 44 bushels	1870	62.15	5.64

BY MACHINERY.

Yield Per acre	Year	Time (Hours)	Cost of Labor
Barley, 30 bushels	1896	2.42	$0.60
Timothy, one ton	1895	3.56	.42
Oats, 40 bushels	1893	7.6	1.07
Wheat, 20 bushels	1896	2.59	.71
Corn, 28 bushels	1894	19.8	2.94
Rice, 44 bushels	1895	17.27	1.00

These figures would indicate that up to about 1860 the industry was in the hands of blacksmiths and machinists, and that since that time, while the number of establishments has decreased, yet the amount of capital involved has enormously increased. The record for the number of employees, the wages paid and the value of the products turned out are in the same trend and mark the significance to which the industry has attained.

The performance record of farm machinery in cheapening production and saving labor is not less striking.

Table showing the influence of machinery in cheapening production and saving labor:

	No Establishments	Capital Invested
1850	1,333	$3,564,202
1860	2,116	13,866,389
1870	2,076	34,834,600
1880	1,943	62,109,668
1890	910	145,313,997
1900	715	157,707,951

The summary of these figures is that the total saving in time and cost of labor by the use of improved machinery in the production of our seven staple crops amounted to the enormous sum of $681,471,827 in 1889.

The commercial aspect of this industry bears its testimony also to the importance of your activities. In 1902 implements to the value of $17,004,854 were exported to foreign countries; in 1903 $22,161,665 worth, and in 1904 $22,325,470 worth. The United States is the greatest manufacturing and exporting country of agricultural machinery in the world, and the reasons for our agricultural prosperity are closely associated with this fact.

With these facts in mind the wonder is that the subject of rural engineering has not found a place long before now in the curriculums of our educational institutions. It is true that the needs of instruction along this line have been supplied by the instruction in engineering which has been given for a number of years. But these courses do not supply men trained in agriculture which the manufacture and sale of agricultural machinery demands. In many institutions agricultural students receive the same instruction as those students who expect to spend their lives in factories and manufacturing plants. But these men, when they work at learn a machine from all points of view, know learn a machine from all opints of view, know its defects and capabilities, and it is most often they who can offer suggestions for improvements. The farmer on the other hand is using a binder to-day and to-morrow a corn harvester, perhaps next day a thresher. These are all complicated machines, and his labors are so diversified that he does not learn to operate any of his various machines and implements with the dexterity and understanding of the factory and machine shop worker. This circumstance is largely responsible for the fact that farm implements of all classes of machinery, are husbanded with the least care and intelligence. It is estimated that in the United States over $100,000,000 worth of agricultural machinery is annually made and sold. According to the best information I can obtain the average life period of a binder east of Indiana is ten years, and west of Ohio it is five years. The average life of a plow is about 200 acres. A mower will cut over about 200 acres during an average period of five or six years. If the life of a machine could be increased one year by better care and more intelligent manipulation it is easy to see what an enormous saving would be made to the farming interests of this country. Such an attitude to saving is not detrimental to the interest of the implement manufacturer who is in the business for substantial growth and profit; for in the implement manufacturing business, as in many others, "a good name is rather to be chosen than great riches," and the reputation of this body in that respect is becoming world-wide. The dexterity and intelligence with which the average American farmer handles his machinery, however, are not commensurate either with the importance of agriculture in this country, or with the status of the implement manufacturing industry. The farmer knows his farm better than he knows his machines. This is due largely to lack of instruction in this branch in our schools.

Thousands of machines and implements are cast into the rubbish heap or are allowed to rust away in the fields because they have been given only a trial and not service. The user lacks the knowledge of mechanics and of the principles of mechanical construction which would enable him to use the machine intelligently. Nor is the manufacturer always within the pale of understanding. Last spring a manufacturer of a well-known line of farm implements and machines advised me to cut our potato sets smaller, in order that his planter might make a better showing. The size of sets for which his planter was adapted is smaller than the results in many States over many years would suggest. Here is an instance, and there are others, where the manufacturer has a large opportunity to increase both yield and quality in potato production. This manufacturer said that he had never grown potatoes, but was making what the farmer wanted. On the other hand, for some time past we have been trying to use a silage cutter which is correct as far as the cutting principle is concerned, but the mechanical principles entering into its construction are very defective. The machine would handle corn well, but would not cut alfalfa perfectly. I took the liberty to mention the defect to the manufacturer and to suggest an improvement. He wrote me that he was sure the machine was perfect—they were selling thousands of them—and that I was the first person who had ever complained.

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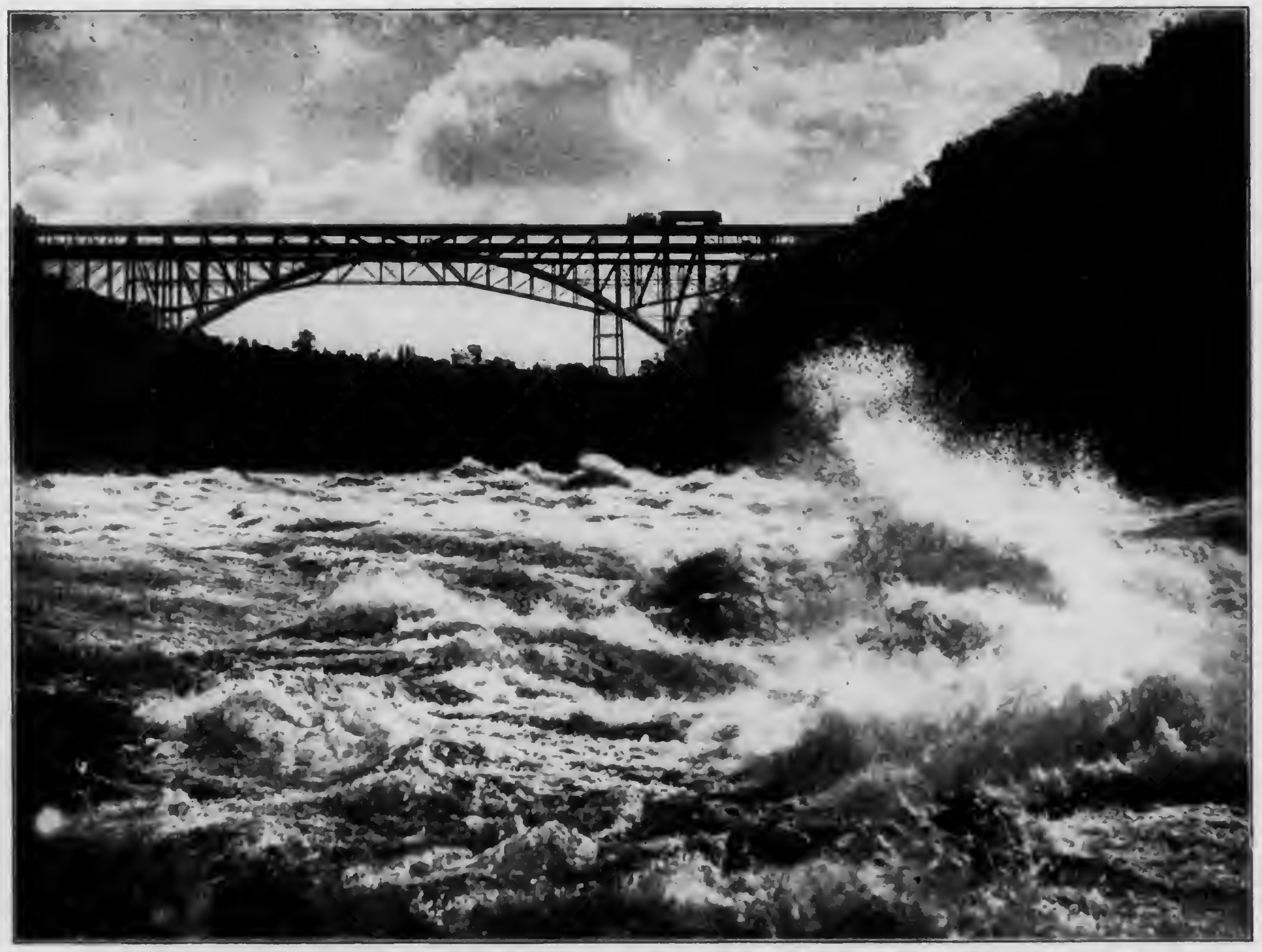
[1] *U. S. Census Bulletin, No. 200, p. 4.*



NIAGARA FALLS.—WHIRLPOOL RAPIDS.

In the agricultural high schools of Hohenheim and Berlin, and latterly in parts of England, museums are provided in which are set up for instruction purposes the best types of American, English and German machinery. These museums are as essential to the instruction in these schools as are other laboratories. In France the Government maintains stations where farm machinery may be tested and studied from the consideration of its efficiency and its fitness for the purpose for which it is made. Those who make use of these museums are better prepared to understand the mechanism of farm machines and to adapt them to the diversified conditions for which they are adapted.

These institutions have been of great advantage to the manufacturer of farm implements and machinery in these countries. They have enabled them to employ more intelligent workmen, and their introducing and selling agents abroad have an understanding and an adaptability for their business that representatives of American manufacturers do not possess. It is a well-known fact that manufacturers in the United States are not taking advantage of all of the advantages and privileges which they possess for furthering and establishing their foreign trade. If we as American implement manufacturers are to maintain our prestige in the manufacture and use of efficient machinery we must aim at a more harmonious union of agricultural and mechanical knowledge and skill and a better understanding of economic conditions abroad.

The gravamen of our problem is how to formulate this subject of farm mechanics and give it teaching power. Educational conditions in the United States do not harmonize readily with the formal museum and laboratory methods of the German and French institutions. These are too far away from the actual life of the field. Farm machinery must not only be seen on show, but it must be seen and studied in service. Farm mechanics must not only be studied in theory, but it must be understood in its application. Thus our present method is essentially that of the laboratory, not in the sense of the laboratory bounded by four walls and a roof, but rather the open fields, with the soil, crops and tools for equipment. It is true, museum, lecture and class room work is given, but this is supplementary to the more practical work in the field with the implements in service.

The manufacturers have had no small part in developing our present system of instruction in farm mechanics. In all of our institutions where this subject has an aesthetic place among the courses of instruction, museums and halls are filled with the most improved types of farm machinery of all classes, which have been donated or loaned by the patrons of this great industry for the purpose of furthering the cause of education along this most important line. This is a generous attitude, and is a testimony to the broad-mindedness and liberality of our American institutions.

The lecture and class room work generally followed in our agricultural colleges is set forth in one of the announcements of courses as follows: "Farm Machinery—Capital invested, construction, cost, life, uses and draft of tillage, seeding, harvesting, threshing, cleaning, grinding machinery, vehicles and farm motors. Lectures, recitations and practicums."

The practicum work usually consists of work along two lines—practice in the field with the implements and machinery with the crops, soils and methods for which they are adapted, and work in the laboratory or hall with the implements or machinery and their parts. The weather is the agent which controls the nature and place of the practicum. The work in the laboratory hall usually consists of the study of implements and machines by way of setting up, weighing and measuring parts, demonstrating construction and design. The following will serve to illustrate the scope of an afternoon's work with a single machine:

1905 Farm Mechanics

Name. Date.

GRAIN DRILL.

Type—Hoe, disc; weight; width over all; height of grain box.

Frame—Wood, steel. If wood, dimensions in cross section of pieces.

If steel, kind of bar; reinforced at the corners, not; cross section; detachable spindle present, absent.

Axle—Steel, wood; square, circular; dimensions in cross section detachable spindle present, absent.

Wheels—Steel, wood; height weight width of rim distance apart at top at bottom disked, not; stagger spokes, not; iron hub, wood hub; gear wheel detachable from hub; circumference of wheels ; dimensions of spokes ; dimensions of felloes.

Hoes—Number ; distance apart ; length of point ; width of point ; length of hoe frame ; sketch cross section of frame at top, at bottom; weight of hoe frame ; gravity pressure, spring pressure; rigid, spring release; alignment adjustable, not; press wheels present, absent; diameter ; rim flat, concave; width.

Discs (if present) diameter ; concavity, angle to line of direction ; scraper present, absent; chain drags present, absent; ball bearings, not; weight.

Seeder—Length ; width at top ; width at bottom ; depth ; capacity in bushels ; bottom flat, sloping to rim; lids rain proof, not; force feed, not; range of capacity of small grain; double rim present, absent.

Grain feeder present, absent; force feed, not; spouts present, absent; reversible, not.

Fertilizer distributor present, absent; force feed, not; cups galvanized, not; range of amounts applied.

Questions

1. What is the advantage of reinforcing the corners?

2. What advantage is gained by having the wheels spread at the top?

3. How is the tire made rigid to the felloes?

4. What objects are served by zigzag adjustment of hoes?

5. How is the depth of hoes regulated?

6. What are the objects of the spring release in hoes?

7. To what are the draw bars of the hoes or discs attached and how do they align with the traces?

8. What is the purpose of the press wheels? of the chain drags?

9. Name some conditions under which the disc drill would be more serviceable than the hoe drill?

10. How may the width between rows be varied?

11. Describe and sketch the seeder gearing.

12. When sowing 64 quarts of oats or wheat per acre, how many revolutions does the square shaft make to one of the land wheel?

13. How are amounts sown per acre varied?

14. What is the purpose of the double run?

15. In sowing corn, for example, how may fertilizer be sown in the rows and not between the rows?

These sheets are placed in the hands of each student and must be filled out by individual study and observation. Similar sheets are made for other machines and implements studied.

Courses in farm blacksmithing and the designing of parts are given.

ONE OF THE BIG TREES OF CALIFORNIA OF UNKNOWN AGE

The Government has extended its Protection to these Monarchs of the Forest

This work is new in our agricultural colleges. Six years ago farm machinery was only incidentally taught as a part of other courses. Now there are several professorships in this subject. Prof. F. H. Kin, formerly of the University of Wisconsin, was the first to reduce the subject to pedagogic form, teaching information gained directly from experiments with farm machinery. Professor Zintheo writes as follows regarding the development of these courses and the scope of their work:

"In 1900 the North Dakota Agricultural College adopted in their curriculum a course in farm mechanics, the work done being principally in the nature of lectures on farm machinery to the students in the short course during the three months of winter.

"In 1901 the Illinois Agricultural College established a course in farm mechanics, which has been developing and enlarging since that time. The agricultural colleges of Minnesota, Wisconsin, Illinois, North Dakota, Indiana, New York, Iowa, Colorado and California are now either offering or preparing to offer to the students in agriculture a course of instruction in the subject of farm mechanics."

The Iowa State Agricultural College at Ames started a department of farm mechanics in 1903. A four-story fireproof building, costing with equipment about $70,000, was erected. Although the building was not entirely completed until the first part of February, 1904, instructional work began in the fall of 1903. The course as now offered by the college is part of the agronomy course. It is one of the studies during the sophomore year which is required of all agricultural students. During that year instruction is offered in field engineering, consisting in field plotting, drainage and road construction, in the fall term, and farm machinery and farm motors in the spring term.

At the universities of Ohio and Illinois large departments have been established, and their halls have been well equipped with machines and implements. Lectures and recitations are given upon the construction and use of farm machinery. The laboratory work consists in taking to pieces and setting up various machines, calibrating planters and drills and testing their draft and accuracy in planting. Plows and harrows are adjusted, weighed and measured, and other work necessary to the general understanding of farm machinery, its construction and adaptabilities.

The implement laboratory work consists in testing the various implements for accuracy of work; corn planter and grain drills are calibrated, to note the accuracy of planting the corn and sowing the grain; grain binders are taken to pieces and rebuilt by the students; pumps and wind mills are tested for efficiency and power; plows and harrows are adjusted and tested for draft. In general the student becomes acquainted with the various machines used on the farm; he learns how to adjust an implement when it is out of order.

Rural engineering as subject with teaching power is new, but it is in a good environment and will grow. It will finally take its place both in importance as well as in scope, along with the courses of electrical, mechanical and civil engineering. The courses as they are now given make adequate provision for the needs of those students who find their lifework upon the farm, but they are not sufficient for that training in rural engineering which our manufacturing and commercial conditions are coming to demand. Rural engineering has been briefly defined as the science and art of laying out farms, designing and constructing farm buildings and works, and making and using farm implements and machinery. This indeed is brief, but the scope is broad, and the results of instruction and investigation in this field will soon be manifested in our educational and industrial affairs

Important National Questions Considered by American Implement Manufacturers

[Report of the National Legislation Committee to the National Association of Implement and Vehicle Manufacturers, at the recent convention at Niagara Falls, N. Y., U. S. A.

The past year has not been a particularly active one for your committee for various reasons. The late date of the convention last year and the early date this year have somewhat limited the time usual between the dates of our conventions, and the short session of Congress, wherein was crowded the necessary legislation for the maintenance of the national Government, together with several matters referred to them by special message of the President, has limited the work of Congress in many matters that would be specially interesting to this organization.

While we have not believed that it would be productive of results to take a very active part in legislation at Washington, the year has not been unfruitful in some matters interesting to us. The greatest war of modern times has been brought to a close through peaceful negotiations suggested by the President of our country, and this possibly may be the last great war in our age, as the conclusion of peace through the means of a peace conference has demonstrated the fact that other means than an appeal to arms can be found to settle the difficulties of nations, and it is believed that the wars between nations will hereafter be largely commercial wars—a fight for supremacy of trade—and that the principle of the open-door policy which is avowed for the East must apply more or less to other nations, and in this subject we are all vitally interested, as it means that this country will eventually have to adopt a broader policy, more in accordance with the present times, in order to expand their foreign business or even to retain what they have at the present time.

Commercial Reciprocity

Under the active direction of the former able chairman of this committee this subject has been given a great deal of time and attention in the past, and the way paved for others to take up the work. Indeed, it has been charged before committees in Congress and in conventions that the only people actively interested in the Kasson treaties, especially the French treaty, were the manufactures of agricultural implements; but the recent enthusiastic convention at Chicago, composed largely of representatives of the farming and agricultural product interests, must show to Congress that other interests are being jeopardized by their failure to act for the best interests of the country at large, and that the American producer or manufacturer who desires to do an export business demands the same protection abroad for his commercial interests as he is entitled to as a citizen of the United States when in a foreign country.

It was particularly pleasant to the members of this organization who were fortunate enough to be present at the recent reciprocity convention in Chicago to hear stated repeatedly on the platform the same sentiments and the same arguments used for other interests in this country that we have repeatedly used in the interests of the manufacturers of agricultural implements for the purpose of maintaining and expanding our export business, and that we are no longer the only interest believing that the enormous increase in the natural and manufactured products of our country requires additional relief by an enlarged foreign outlet, and that some general policy, whether called by the name of reciprocity, minimum and maximum, or dual tariff, should be adopted which will open the markets of the world for our excess of production.

Both the great national parties paid their respects to this subject in the platforms of 1904. The Republicans as follows: "We have extended widely our foreign markets, and we believe in the adoption of all practical methods for their further extension, including commercial reciprocity wherever reciprocal arrangements can be affected consistent with the principle of protection and without injury to American agriculture, American labor or American industry."

The Democrats as follows: "We favor liberal trade arrangements with Canada and with people of other countries where they can be entered into with benefit to American agriculture, manufacturers, mining, or commerce."

Notwithstanding these broad declarations of both parties concerning reciprocity, nothing has been done at the last session of Congress upon this important question; but it is anticipated that at the coming session there will be some very active measures taken with a view of fairer and freer trade relations with other governments without sacrificing the principle of protection where it is absolutely essential to the prosperity of any special industries. The prosperity of the country and the necessity for broader markets cannot longer be embarrassed by a policy which would build a stone wall around the country and prevent the natural outgrowth of our wonderful industrial development.

The benefits to be derived to the United States by reciprocal, fair treaties with other nations have not been clearly understood by many manufacturers; and the fear of their operation has prevented many from joining forces with us to secure them. The question will now become of paramount importance owing to the action taken by some foreign governments, which will practically exclude American agricultural and manufactured products. The manufacturers of the United States have already suffered a loss of trade through the preferential tariff of Canada. They are now threatened with a further loss in 1906 by the operation of the new German tariff law, and each and every member of this Association should take active and energetic measures to bring to the attention of his representative in Congress the importance of some action being taken at once to protect our markets abroad.

Canadian Reciprocity

This subject will always interest the members of this Association, and some reciprocal treaty will sooner or later be found advantageous to both governments. Canada has many things which this country can use to good advantage, and the United States also has many things which can be used in Canada to advantage, and a reasonable and fair reciprocal treaty between the two governments would be mutually advantageous.

Canada recognizes the value to her of the British market, and believing that the United States cares nothing for her trade except to keep it all going one way, in 1897 instituted a plan for a preferential tariff. Before the adoption of this measure the purchases of Canada from Great Britain were becoming less and less in value, but since its adoption the imports from Great Britain into Canada have increased annually, and now are 100 per cent. more than they were in 1897. This increase of imports into Canada from Great Britain has been at the expense chiefly of the United States. Canada is one of the largest consumers of American manufactured goods, the value of our exports in 1904 amounting to $131,274,346, while our imports from Canada were $51,406,625.

Free Importation of Raw Materials Through Drawback

The tariff act of 1897, section 30, provides that where imported materials on which duties have been paid are used in the manufacture of articles manufactured or produced in the United States there should be allowed on the exports of such articles a drawback equal in amount to the duties paid on the material used less 1 per cent. of such duties; provided, that when the articles exported are made in part from domestic materials the imported materials or the parts of articles made from such materials shall so appear in the completed articles that the quantity or measure thereof may be ascertained.

This act of 1897 has been the subject of considerable controversy between producers and the Government officials, but stands as the law to-day and should be taken advantage of by all members of our Association who do an export business and use in their product any portion of material that has been imported and on which duty has been paid, as they are entitled to 99 per cent. rebate of the duty originally paid.

National Incorporation Act

There are constantly being introduced in Congress measures intended to better the control of corporate interests, as S-6238, "creating a national board of corporations and providing for the regulation thereby of corporations engaged in interstate business," and H. R. 18642, "prohibiting officers of the United States from aiding, encouraging or countenancing corporation monopolies," and H. R. 18643, "prohibiting corporations from making money contributions in connection with political elections;" and while representatives of the Government are seeking ways in which to control corporations, the corporations themselves are seeking some method by which they will avoid the petty annoyances and expenses incurred by reason of laws passed by State governments, many of them unconstitutional.

It is believed that the disclosures now being made before a Legislative Committee in the city of New York of the methods pursued by the officers of three of the largest life insurance companies of the world will demand the attention of Congress the coming session, and that the policy holders of these companies will rise in their might and demand with no uncertain voice a national incorporation law that will give the Government authority to control and supervise all corporations doing an interstate commerce business, which shall include the life insurance companies, and give it power to compel by prompt and effective measures every corporation to absolutely obey the law and at the same time make the law broad enough in scope to afford protection to the interests which it supervises.

For years the subject has appealed to those manufacturers who did an interstate commerce business with branch houses and were compelled to submit to the laws of some States, which if strictly enforced would be almost as prohibitory to the interests of our manufacturers as the proposed new German tariff to our German export business. A general corporation law under the control and direction of the Secretary of Commerce and Labor would solve many of the difficulties which we are now compelled to face, and while a national incorporation law would be opposed by some States who are increasing their revenues largely by incorporating companies outside the limits of their borders, it is of great national importance, and can well be classed alongside of the incorporation of national banks, the control and distribution of assets to individuals and corporations through the means of the national bankrupt act and the control of railroads and commerce through the Interstate Commerce Commission. The subject has received the attention of the National Interstate Commerce Commission and the United States Industrial Commission, and a bill presented by Congressman W. H. Palmer, Wilkesbarre, Pa., "providing for the organization of corporations engaged in commerce in the United States" is now pending, and should receive the active support and co-operation of every member of this Association at the coming session of Congress.

Department of Commerce and Labor

This department is moving systematically but cautiously, with as little publicity as possible, in investigating various subjects which have been referred to it, and subjects which it is believed should properly come under its control; and representing as they do more or less the commercial interests of the country, they will have a strong influence in preventing legislation antagonistic to and averse to the interests of the American manufacturers, and their report to Congress on what has been done this past year is looked forward to with much interest.

Labor

The last session of Congress had its usual number of labor bills introduced, many of which, however, are not interesting to our members, but the fate of the following was watched with care.

H. R. 16553—To protect free labor and industries in which it is employed from injurious effects of convict labor.

H. R. 17338—To amend the eight-hour law.

It would very much have interested members of this Association had the bills become law, but they failed of passage.

In this connection it is interesting to note that the Supreme Court of the United States by a decision of 5 to 4 has declared the ten-hour law of New York unconstitutional, and in rendering its decision states:

"The statute necessarily interferes with the right of contract between employer and employee concerning the number of hours which the latter may work in the bakery of the employer. The general right to make a contract in relation to his business is part of the liberty of the individual protected by the fourteenth amendment of the Federal Constitution, which cannot be suspended as a valid exercise of the police power to protect the public health, safety, morals or general welfare."

This decision is particularly interesting to every employer of labor, for it has been declared by a majority of the highest court in the United States that only as a police regulation where the health of individuals is concerned is a law of this character constitutional.

Improved Consular Service

While we believe that there is no market in the world so good for the American manufacturer as the home market, still when that market ceases to require the natural production of the country and there comes an overproduction, conditions soon become demoralized and unsatisfactory. Competition is said to be the life of trade, but too much competition may mean ruin to competitors, and the United States must find an outlet abroad for its surplus of agricultural, natural and manufactured products, and with satisfactory trade relations by treaty or otherwise, with foreign governments, there is no department that can aid and assist in developing the export business like a properly conducted consular service.

When the exports of this country began to increase over the imports with a large balance of trade in favor of the United States, we entered upon a period of world-wide progressiveness unparalleled in history, and while there are exceptions, to be sure, it is to be regretted that so small a part in this great progress is due to efforts of our consular agents who have been charged with the duty of promoting the commercial interests of the State and its individual citizens.

The great majority of these consular agents are not citizens of the United States and have no interest in their duties to citizens of the United States, except so far as the fees they receive. Great Britain's and Germany's progress in the world's commerce has been largely due to the educated, specially equipped men who have been sent out from their home countries as commercial agents in the consular department, and these governments have established schools wherein preliminary training can be obtained.

However commendable the policy of the present administration may be in making their appointments, a standard of high efficiency will not be reached or maintained until the principles governing such appointments, together with some fixed system of promotion such as is substantially covered by the Lodge bill, have been enacted into law. We sincerely hope to see the Lodge bill passed as it was originally drawn.

Parcels Post

Three different bills were introduced in the House of Representatives the past year favoring a parcels post, and a memorial by the Legislature of Wyoming favoring it was referred to the Committee on Post-offices; but as there was but little interest in the measure and no action was taken, the prospects for the passage of a parcels post bill are not very good.

By convention a parcels post was concluded the past year between the United States, Belgium, Great Britain, Japan and Norway, and packages in all cases limited to the value of $50 or its equivalent, and a weight of four pounds, four ounces.

National Bankruptcy

Eight bills were introduced during the last session proposing amendments to the act establishing a uniform system of bankruptcy, but with no results. The disposition of Congress seems to be to make no alteration in this law, although certainly some amendment to Section 70A, fifth clause, could be made to the advantage of parties making conditional sale contracts, by which the title remains with them until paid; but as there is quite a sentiment in some sections favorable to a repeal of the whole act, we cannot afford to press for specific amendments, if in doing so we jeopardize the law itself, and we are inclined to believe that it would be much better to have it remain as it is rather than to have it tinkered to death and its more important features changed to meet the views of some special district.

No one engaged in interstate commerce business can fail to appreciate the advantages of a national bankruptcy law.

Reistration of Trade Marks

A bill was introduced to authorize the registration of trade-marks used in commerce with foreign nations or among the several States and to protect the same, which became a law. This bill was prepared by the Committee on Patents and extends the trade-mark law to interstate commerce, besides revising the law in many important respects. Delegations of the American Bar Association, Patent Law Association, the American Advertisers' Association and the American Manufacturers' Association petitioned for the passage of the law.

Railroad Rate Regulation

This subject is receiving the attention of a great many business interests at this time and is one that this Association is very vitally interested in, as it is believed by many members of the Association that our character of goods is bearing an unnecessary and excessive burden by reason of the rates on the goods that they manufacture being altogether out of proportion to the rates charged on other classes of freight, such as grain, cotton and live stock.

The subject just now is receiving the attention of the National Government as represented by the President, Congress and Interstate Commerce Commission, and any action on the part of your committee the past year would have been premature until some opportunity presented itself to make their voice heard and work effective.

The interests of this Association require that this subject particularly should be watched by your committee another year with a view of everything being done to assist those having it in charge, in arriving at a fair and just solution of the subject to all interests involved.

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Under no circumstances do we allow commissions to advertising agents.

EXCESS OF EXPORTS

One of the most striking features in the trade of the United States with other countries, in farm products, is the large annual excess of exports, both foreign and domestic, over imports. For five years—from 1898 to 1902, inclusive—this excess, or export balance, exceeded the imports: in other words, the exports of farm products from the United States during those five years were more than double the imports. In 1898 the farm-product exports, domestic and foreign, amounted to $869,000,000 and the farm-product imports to $314,000,000, while in the trade in all merchandise the total exports amounted to $1,231,000,000 and the imports to $616,000,000. The farm-product exports in 1904 were valued at $872,000,000 and the farm-product imports at a little more than one-half that sum, the balance in favor of exports being $410,000,000.

These large annual export balances in farm products are not payments for imports of other merchandise, since the exports, domestic and foreign, of products of fisheries, forests, mines, and factories have more than paid for all imports of those products during the seven years ending June 30, 1904. The balance in 1903 in favor of imports, in trade other than farm products, was more than compensated by the export balance in that trade in 1904, and in all merchandise the exports, domestic and foreign, exceeded the imports by $470,000,00.

The value of exports of domestic farm products in 1904 was surpassed in only two years —1901 and 1903—in spite of the decrease in exports of grain and grain products in 1904. The value of domestic exports of farm products during the period from 1898 to 1904, inclusive, ranged from $703,000,000 to $952,000,000, while during the period of 1890-1897 this value only once reached $800,000,000, and in each of the other years was less than $690,000,000.

A SUCCESSFUL EXPOSITION

The managers of the Lewis and Clarke exposition at Portland, Oregon, have every reason to be proud of the success that has crowned their efforts. There were many critics who were quite sure the exposition would be a failure financially and they based their predictions on the fact that the people have had a surfeit of exposition and the other fact that Portland was hundreds of miles from the center of population. But all dire prophecies were set at naught, and the enterprise was in every way a success. The greatest service rendered was in presenting to the world the wonderful progress, development and resources of the great northwest country. For many years to come that magnificent domain will feel the impetus given by this remarkable exposition.

As a rule great expositions are financial failures, but this can not be said of the Lewis and Clarke exposition. Instead of a complete loss being sustained by those who subscribed the money, a dividend of more than 40 per cent will be declared. In other words, the subscribers will receive back 40 cents on every dollar they subscribed. This record has been excelled by only one exposition venture, the Trans-Mississippi exposition at Omaha in 1898, which returned 90 cents on the dollar.

The country has been vastly benefited by the Lewis and Clarke exposition because thousands of eastern people were led by it to travel across the country, and a trip across this great continent is a liberal education for any American citizen.

A MODERN DANGER

Chicago is experiencing a phase of the age of steel which is bringing discomfort and danger to many people who use the streets in the central business district.

Somewhere in almost every block a steel skeleton for a skyscraper is rising, and in these skeletons pneumatic drills and riveters are at work. Some of these are at work at such heights that the infinitesimal bits of steel broken off drift incredible distances with the winds, finding lodgment in the eyes of both man and beast.

"I have had a score of such patients in the last few weeks," said a downtown oculist. "I hardly knew what to make of it at first. People came in here with bloodshot eyes, suffering intensely, yet I was unable to find the irritable substance. In some of these cases the inner lid was cut and crosshatched as with a knife. With a glass I discovered a tiny bit of steel, and since that time the matter has simplified. The action of these pneumatic tools is filling the air with particles of steel, some of them almost too small to be seen with a glass, yet cutting like a diamond."

A NEW WORLD

The American continent is no longer the scene of the most striking innovations; America is an old story. Africa is the new world. The French are stretching a telegraph-wire from the Mediterranean across the Sahara to Timbuktu. The wire has already reached the Tuat oases. It will pass thence to the Ahaggar Mountains, where live the Tuareg bandits, and so into a country which a few years ago was extremely dangerous to an avowed Christian.

The Alaska gold output this year promises to exceed last season's product of $19,300,000. Over $15,000,000 has already reached the states from that field and half as much more is expected.

During the six months ended June 30, 1905, there were exported from the United States 279,553 cattle, valued at $21,647,545.

INCREASE IN EXPORTS

During the ten months ended October 31 the exports of the United States have increased $108,953,422, as compared with a like period of last year. The volume of imports has increased even greater.

The recovery of gold from sea water is still a fascinating problem. Liversidge has estimated that the ocean contains from 130 to 260 tons of gold per cubic mile, or a total of 100,000,000,000 tons; but if this be divided by 100 the value would still be $697,711,000,000,000, while M. de Wilde, of Brussels, finds that all of the gold mined up to the present time would not form a cube more than 30 feet square, representing a value of $13,559,946,000. M. de Wilde has a new method of separation, from which he expects great results. He treats ocean water with a concentrated solution of salt of tin, which transforms the gold into purple of Cassius, an oxide of gold and tin, and this is fixed by hydrate of magnesia, which is liberated from the sea water on adding lime water. The hydrate of magnesia has been charged with as much as 15 per cent. of gold, which is removed with cyanide of potassium solution.

MOVING AMERICAN CROPS

For the movement of the United States crops of 1905, 1,500,000 freight cars will be necessary. The Chicago correspondent for the St. Louis *Globe-Democrat* says: "Measuring the prosperity of the American farmer this year in units of freight cars, railroad statisticians have figured out that the grain traffic for this crop year will aggregate 1,500,000 car loads. If all this grain could be marketed simultaneously and hauled in a single solid train of freight cars, the train would be 11,931 miles long, exclusive of the locomotives that would be necessary to move it. Dividing this huge train into smaller ones of 40 cars each, there would be required 37,500 locomotives, or 355 miles of draft machinery. Adding this 355 miles to the 11,931 miles of cars, there is a total of 12,286 miles. To hold the cars and engines it would require nearly every foot of four tracks extending from New York to San Francisco. The necessary single track would measure half the circumference of the globe."

Impressive as these figures are, this correspondent says that they do not begin to tell the vastness of the wealth which the American farmer has taken from his soil in corn, oats, wheat, barley and rye in the year 1905. This correspondent says: "Railroad men's estimates are confined to the grain which will be moved to market centers on the steam roads. Probably not over one-third of the grain produced will ever see a freight car. The other two-thirds will be hauled to local mills in wagons, or will be consumed by live stock on the farms. To hold the entire corn crop alone would call for a train and engines 21,000 miles in length, the equivalent of six golden zones reaching from Hell Gate to the Golden Gate. In this story of agricultural treasure lies the reason for the unparalleled preparations of the Western railroads for traffic this season. If the farmer

were not already well supplied with ready money and were forced to rush his grain to market, as he has done in past years, it is reasonable to suppose the railroads would be utterly swamped with grain traffic."

According to the same authority railroad statisticians estimate the wheat and oats crop of Minnesota and the Dakotas at 326,000,000 bushels, of which 190,000,000 bushels will be marketed on steam roads. They place the total yield of corn at 2,566,000,000 bushels, and expect that 756,000,000 bushels will be hauled on freight trains greater or less distances. Granting that these figures are correct, there will be 173,000 carloads of wheat and oats from the three States mentioned, or 4,325 trains of 40 cars each. The estimate for corn is 796,000 carloads or 19,900 train loads of 40 cars each. On top of this then probably will be 17,000 carloads of flaxseed to be hauled from the Northwest. To haul the 1,500,000 cars estimated for all kinds of grain, there would be a movement of a hundred trains of 40 cars each for every day of the year.

ENTOMBED IN STEEL

A funeral without parallel in modern times took place at the Midvale Steel Works, Philadelphia, Pa., U. S. A., recently when a forty-ton ingot of steel, representing all that remains of two workmen who were cremated in the molten mass was buried with ceremonies as impressive as though the bodies themselves were being consigned to the grave.

As surpliced priests recited the last rites of the Catholic Church over the ingot, every wheel in the works was still. Engines that had run six months without a single breathing spell were stationary. Long rows of machines which had night and day filled the air with a chaos of noises were silent.

Big trip-hammers, which send their crushing blows ringing out seven days each week, were permitted to rest upon their anvils, and even the breathing of the boilers, panting softly under their forced restraint, seemed hushed and hesitating.

It was an awed silence of perhaps half an hour that cost one of the country's greatest industries many hundreds of dollars, for while the services were being said over a lifeless, forbidding cold mass of steel, orders aggregating millions waited.

John Forkin and Joseph Gorda, employes of the steel works, were assigned to dig a pit in front of one of the big furnaces into which the liquid metal was to be run.

They were working fifteen feet below the yawning mouth of the furnace, when it burst, and a torrent of boiling steel poured down upon them. A stifled cry warned other employes of the catastrophe. When a sorrowful circle gathered around the pit, a lake of red, glowing metal, there was not a single sign of the two workmen.

Flesh, clothing, the wooden handles of their tools and even the hardened steel implements themselves had been cremated in an instant, and terror spread over the ring of swarthy faces that glared into the rolling, bubbling mass.

It took many hours for the mass to cool, and a conference of officials of the company decided that the ingot, although it doubtless did not contain a single tangible ounce of the ashes of the cremated men, should be buried with every rite due the body itself.

A big pit was dug in the yard of the works. Huge cranes lifted and tugged and hauled the forty tons of metal out of the casting room and lowered it into the freshly made grave. The relatives of the two men were advised that services would be conducted over the mass.

The services were in both Polish and English, as the workmen were of different nationalities, but of the same faith. Orders were issued by the company prohibiting spectators from entering the yard, and when the services began a crowd of many hundreds of curious men and women swarmed outside the gates.

Gorda's two sisters were the only mourners, as Forkin left no one in this city. A Polish priest accompanied the sisters to perform the Polish ceremony. Every workman who had duty at the shops for the day stood, hat in hand, on three sides of the inclosure, and the silence as the first words of the ceremony were spoken was so intense as almost to be felt.

There were no tears, there was no pall, there were no flowers. Those present stared down into a deep pit at a black mass of steel, as though unable to grasp the significance of its grewsome burden.

The final sentences of the Polish services spoken, planks were laid across the chasm, the workmen went about their tasks, and soon the busy hum of industry was once again at its height.

AMERICAN IMPLEMENTS

The secret of the phenomenal success of American farm implements abroad has been, before all other things, their adaptability to the ever-changing conditions of foreign soils, crops and climates, says the *New York Commercial*. American manufacturers in striving to meet the widely diversified requirements of our own broad country found themselves brought face to face with nearly every possible problem in farm implement construction, and when they came to seriously study the conditions and requirements in foreign fields they usually were able to apply some of the results of their previous experience to the new problems.

Thus a type of plow designed originally for hill work in the cleared lands of the Northwest, was found to be, with a few slight modifications to meet local customs, just the thing for certain parts of South America where conditions were surprisingly similar. The plow that won the widest popularity in the great plains of the middle West proved to be the type that gave the best satisfaction in South Africa, while another popular Western type won instant favor in Argentina.

In order to meet the requirements of foreign buyers, satisfy their prejudices, and at the same time give them a better article than they had been using before, it was necessary for American manufacturers to pursue a policy that was about half way between the extreme British idea of offering foreigners nothing but the traditional British styles—"take it or leave it"—and the German plan of making an exact imitation of the native or local implement. It was not long before our manufacturers found that the attempt to "educate" foreign buyers into recognizing the superiority of our styles of implements and methods of operating them was a barren waste of money and energy unless much was conceded in the way of modifying our styles to suit local prejudices and customs.

Thus to suit the farmers of British India the beam of the plow had to be unusually long and the share comparatively small. In Scotland, farmers did not wish their plows to turn the furrow completely over, as ours usually do, but only to set it on edge. With some adjustments the American plows sent there proved adapted to do the work in the manner preferred, and won a wide and lasting popularity owing to their lightness, durability and efficiency.

In almost every instance the local prejudice against American implements proved to be regarding details rather than essentials, and skillful salesmen were soon able to arrange for modifications by the manufacturers, that enabled them to secure a trial, and thus win trade. For a long time foreign users complained that American farm machines, such as mokers, reapers, etc., were too light to be durable. It was only after longe-continued trials that they were convinced that in reality it was the foreign-built machines that were too heavy.

In the American machines wood was used wherever strength was not essential, and in the steel parts the size and weight were carefully adjusted to the strain, with the result that the machines proved to be absolutely strong enough to meet all demands, and as durable as the best, while costing less and weighing less sometimes than half as much. In the British and continental machines that occupied the neutral markets before the advent of American types, iron and steel were literally piled on, regardless of cost and also regardless of utility. Parts on which there could not possibly be any strain were made of iron an inch thick, and so on. The result was that two, three or four horses or other draft animals were required to pull one of these clumsy machines, whereas the same amount of work was done with a lighter American machine with half the animal power. This point quickly appealed to the farmers, and it is within bounds to say that American practice in this particular has revolutionized the industry the world over.

Obviously, however, our manufacturers to get into the requisite touch with foreign buyers had to send competent salesmen direct to each important market. These men first studied carefully the implements already used, frequently shipping samples home for the designers and inventors at the factory to look over. Very frequently, with their wide experience of home styles, the export salesman saw at a glance that some model already being made in large quantities for the home trade could, with slight modifications, be made to meet foreign requirements. In such cases success was prompt and comparatively easy.

In other cases, however, it was necessary to produce a special article planned along the lines of the foreign implement rather than domestic styles. Even here, however, the diversified home experience of the manufacturer proved of vast assistance.

AMERICAN PEANUT CROP

Suffolk, Va., U. S. A., is the largest market in the world for home grown peanuts. When it is remembered that Americans consume annually more than 6,000,000 bushels of peanuts grown in Virginia and other Southern States, and at a cost of over $14,000,000, it is not to be wondered that a short crop has caused the producers to demand a high price.

In suitable soil the peanut will grow in any latitude where Indian corn will thrive; but a good crop depends entirely on the climate—conditions which are found on the Atlantic seaboard from New Jersey southward, in the Mississippi Valley as far north as Wisconsin and on the Pacific Coast south to the Columbia River. In the Virginia peanut section—and it is a very extensive one—it has been found that where the land is properly prepared there is little to be done in the way of cultivation after the seeds are placed in the ground.

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In former years most planters had the nuts cleaned before sending to market, but since the establishing of peanut factories the nuts are brought in just as they are picked from the vines. The factories, which are, in fact, recleaners and graders, buy the output of the planters as farmers' stock, and after a treatment of cleaning, and sorting by both hand and machinery the nut is ready for the consumer.

The factories are four-story buildings, but the machinery is neither costly nor complicated, consisting of fans, brushes, polishers, sifters and separators. As the great loads of nuts are brought to the factory they are sacked and carried to the top floor by elevators, where the nuts are dumped into large hoppers. Then they pass into large cylinders on the next floor, where they are cleaned by attrition, fans taking out the dust as they pass around the cylinders. From this floor the nuts pass to the second floor, where they go through fans which blow out and separate the lightweights and the others pass on to tables on endless movable belts. At these tables the hundreds of negro women and children pick out the discolored and faulty nuts and allow the better ones to pass on into a grader, which grades the nuts as to size. Through all this machinery the nuts have been polished until they come out looking as clean as pearls.

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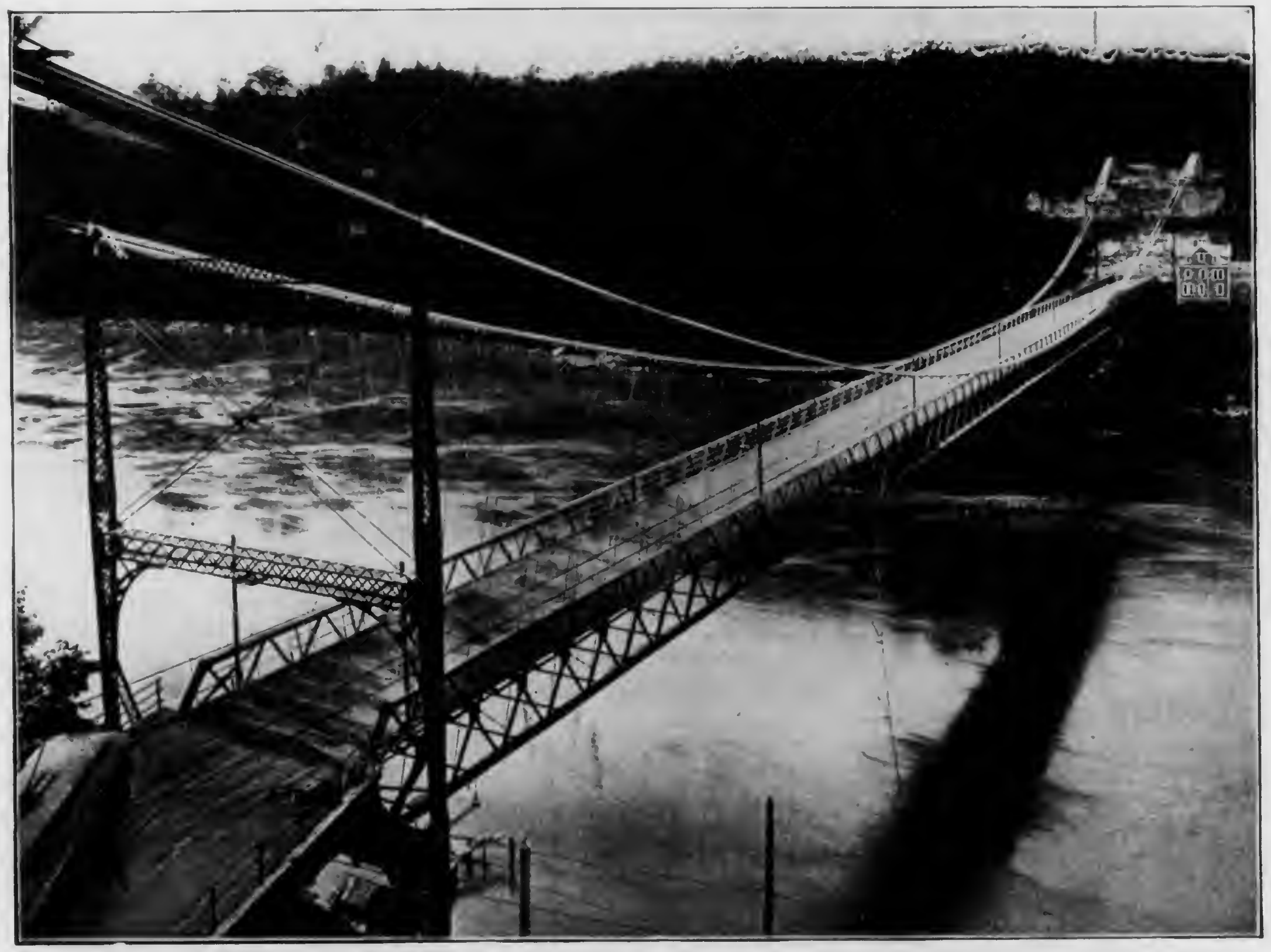
At least $3,000,000 may be added to the value of the peanut crop as a direct benefit to the American farmer, who turns his hogs into the fields as soon as the crop is harvested. The nuts left in the ground furnish sufficient food for almost the entire winter. The razorbacks get down to business when they are hungry, and with their long snouts turn up the ground, finding the nuts where they had been pulled from the roots of the vines. The vines are carefully saved and cured, making excellent forage for all kinds of live stock.



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Les fabricants d'outils des Etats-Unis, s'intéressent vivement aux questions de réciprocité et de commerce extérieur, d'autant que les exportations de ce pays en outils agricoles se sont accrues, d'année en année, plus que celles de n'importe quelle autre branche de produits manufacturés.

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Canaux et agriculture

M. Frank W. Mahin, consul des Etats-Unis à Nottingham (Angleterre) dit, dans un rapport au gouvernement, que les prix élevés du transport des marchandises, le déclin de l'agriculture, la platitude générale du commerce et plusieurs autres causes de mécontentement, ont tourné l'attention, dernièrement, vers le système des canaux, dont l'ensemble représente une longueur de 3,907 milles dans le Royaume Uni. Les compagnies de chemins de fer en possèdent près du tiers, ce qui, évidemment, diminue la valeur du système comme moyen de concurrence dans le transport des marchandises. On propose maintenant que l'Etat se rende acquéreur des canaux et que ceux-ci soient *électrifiés*. Selon les statistiques officielles, le revenu total annuel des canaux est de 12 millions de dollars, et les dépenses totales de 8 milions 500 mille dollars environ, ce qui, apparemment, laisse un assez joli bénéfice. Un ingénieur civil éminent, qui a soigneusement étudié la question, suggère que l'Etat mette à part une somme de 20 millions de livres sterling (près de 100 millions de dollars) pour l'achat, le perfectionnement et *l'électrification* des canaux, laquelle somme comprendrait un capital actif d'environ 15 millions de dollars. L'ingénieur s'étend sur les divers avantages que le projet comporte ; il fait remarquer que l'électrification fournirait de la force électrique à bon marché pour le service du transport des marchandises, pour l'élevation de l'eau au moyen de pompes, pour l'irrigation, le labourage, le barattage du beurre, la mouture ;—en un mot la rénovation de la canalisation intérieure ne contribuerait pas peu au rappel de la prospérité agricole.

Les progrès de notre pays

Les bonnes feuilles du résumé statistique du gouvernement pour l'année 1904 nous apportent une merveilleuse histoire des progrès de ce pays, progrès en population, en finance, en commerce, dans les industries, en agriculture.

Dans l'espace d'une seule année, la population des Etats-Unis a augmenté de 1,380,000, la population totale étant maintenant évaluée à 87,752,000 âmes.

Au point de vue financier, le pays prospère comme il n'avait jamais fait. La circulation monétaire a augmenté, dans l'espace d'une année, de 151,450,691 dollars, soit un gain de 2 dollars par tête. Le gain dans la circulation de l'or seule a été de 28 millions. La dette nationale a diminué de 19 millions, tandis que les payements d'interêts annuels ont diminué de plus de 1,360,000 dollars. Le nombre de personnes déposant de l'argent dans les caisses d'épargne a augmenté de 270,215, et la quantité totale des dépôts indique un gain de 446,853,405 dollars.

Les exportations américaines pour l'année ont considérablement augmenté, d'un peu plus de 40 millions de dollars, tandis que les importations ont diminué d'environ 34 millions de dollars. Ces chiffres indiquent les progrès étonnants des industries manufacturières dont non seulement le nombre se multiplie mais encore la production qui est doublée et triplée.

La qualité des produits manufacturés est telle que les commandes de l'étranger deviennent de plus en plus considérables et de plus en plus nombreuses. C'est là un signe certain de la prochaine suprématie américaine dans le monde manufacturier.

Bien que les exportations américaines de produits manufacturés augmentent si rapidement, c'est encore le fermier qui remporte la palme. L'exportation des produits agricoles, l'année dernière, a atteint le chiffre le 853,643,073 dollars, tandis que se lui des produits manufacturés n'était que de 452,415,921 dollars ; c'est, pour les produits agricoles, un gain de plus de 10 pour cent sur les exportations de l'année précédente.

Comme preuve de l'excellente condition financière des Etats-Unis et de leur aptitude à pourvoir à la demande extérieure, les chiffres suivants ont également leur importance :

Aux lignes de chemins de fer, qui sont au pays ce que les veines et les artères sont au corps humain, 4,595 milles ont été ajoutés l'année dernière. Le nombre des voyageurs transportés dépasse de plus de 42 millions celui de l'année précédente, la somme totale

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M. C. F. Huhlien a été élu président pour l'année prochaine. La prochaine assemblée se tiendra à Chicago.

Canaux et agriculture

M. Frank W. Mahin, consul des Etats-Unis à Nottingham (Angleterre) dit, dans un rapport au gouvernement, que les prix élevés du transport des marchandises, le déclin de l'agriculture, la platitude générale du commerce et plusieurs autres causes de mécontentement, ont tourné l'attention, dernièrement, vers le système des canaux, dont l'ensemble représente une longueur de 3,907 milles dans le Royaume Uni. Les compagnies de chemins de fer en possèdent près du tiers, ce qui, évidemment, diminue la valeur du système comme moyen de concurrence dans le transport des marchandises. On propose maintenant que l'Etat se rende acquéreur des canaux et que ceux-ci soient *électrifiés*. Selon les statistiques officielles, le revenu total annuel des canaux est de 12 millions de dollars, et les dépenses totales de 8 milions 500 mille dollars environ, ce qui, apparemment, laisse un assez joli bénéfice. Un ingénieur civil éminent, qui a soigneusement étudié la question, suggère que l'Etat mette à part une somme de 20 millions de livres sterling (près de 100 millions de dollars) pour l'achat, le perfectionnement et *l'électrification* des canaux, laquelle somme comprendrait un capital actif d'environ 15 millions de dollars. L'ingénieur s'étend sur les divers avantages que le projet comporte; il fait remarquer que l'électrification fournirait de la force électrique à bon marché pour le service du transport des marchandises, pour l'élevation de l'eau au moyen de pompes, pour l'irrigation, le labourage, le barattage du beurre, la mouture;—en un mot la rénovation de la canalisation intérieure ne contribuerait pas peu au rappel de la prospérité agricole.

Les progrès de notre pays

Les bonnes feuilles du resumé statistique du gouvernement pour l'année 1904 nous apportent une merveilleuse histoire des progrès de ce pays, progrès en population, en finance, en commerce, dans les industries, en agriculture.

Dans l'espace d'une seule année, la population des Etats-Unis a augmenté de 1,380,000, la population totale étant maintenant évaluée à 87,752,000 âmes.

Au point de vue financier, le pays prospère comme il n'avait jamais fait. La circulation monétaire a augmenté, dans l'espace d'une année, de 151,450,691 dollars, soit un gain de 2 dollars par tête. Le gain dans la circulation de l'or seule a été de 28 millions. La dette nationale a diminué de 19 millions, tandis que les payements d'interêts annuels ont diminué de plus de 1,360,000 dollars. Le nombre de personnes déposant de l'argent dans les caisses d'épargne a augmenté de 270,215, et la quantité totale des dépôts indique un gain de 446,853,405 dollars.

Les exportations américaines pour l'année ont considérablement augmenté, d'un peu plus de 40 millions de dollars, tandis que les importations ont diminué d'environ 34 millions de dollars. Ces chiffres indiquent les progrès étonnants des industries manufacturières dont non seulement le nombre se multiplie mais encore la production qui est doublée et triplée.

La qualité des produits manufacturés est telle que les commandes de l'étranger deviennent de plus en plus considérables et de plus en plus nombreuses. C'est là un signe certain de la prochaine suprématie américaine dans le monde manufacturier.

Bien que les exportations américaines de produits manufacturés augmentent si rapidement, c'est encore le fermier qui remporte la palme. L'exportation des produits agricoles, l'année dernière, a atteint le chiffre le 853,643,073 dollars, tandis que se lui des produits manufacturés n'était que de 452,415,921 dollars; c'est, pour les produits agricoles, un gain de plus de 10 pour cent sur les exportations de l'année précédente.

Comme preuve de l'excellente condition financière des Etats-Unis et de leur aptitude à pourvoir à la demande extérieure, les chiffres suivants ont également leur importance:

Aux lignes de chemins de fer, qui sont au pays ce que les veines et les artères sont au corps humain, 4,595 milles ont été ajoutés l'année dernière. Le nombre des voyageurs transportés dépasse de plus de 42 millions celui de l'année précédente, la somme totale

étant 696,908,994. La quantité totale des marchandises transportées sur l'espace d'un mille a été de 171,290,310,685 tonnes, soit plus de 15 millards de tonnes de plus que l'année précédente.

Tout cela ne fait que prouver que les Etats-Unis sont en ce moment très prospères et sont en état d'étendre leur commerce extérieur jusqu'à la limite du possible. Les manufacturiers américains préparent de nouvelles campagnes de vente et consacrent beaucoup d'énergie à ces projets. On est en train de publier des imprimés, en grands nombres, dans toutes les langues du monde commercial, et les importateurs de l'étranger peuvent s'attendre à voir arriver une armée de voyageurs de commerce et de démonstrateurs qui ne contribueront pas peu à faire apprécier par les consommateurs étrangers la qualité supérieure des marchandises de marque américaine. Cette période de prospérité a délié les bourses des manufacturiers américains, qui cherchent maintenant dans les marchés extérieurs un débouché pour les produits de plus en plus nombreux de leurs fabriques et de leurs filatures. Ils se proposent de remuer ciel et terre pour créer une demande pour les produits de marque américaine.

Les rapports commerciaux et financiers de toutes sources — gouvernement, banques, agences de commerce,—pour le premier trimestre de 1905, sont des plus encourageants. Tous indiquent une hausse considérable sur la même période de l'année passée: les industries américaines peuvent s'attendre à une année prospère.

Outils agricoles américains

Le secret du succès phénomal des outils agricoles américains à l'étranger réside avant tout dans leur adaptabilité aux sols, aux récoltes, aux climats les plus variés des pays étrangers. Les manufacturiers américains en s'efforçant de satisfaire aux besoins variés et multiples de notre vaste pays, se sont trouvés aux prises avec à peu près tous les problèmes possibles dans la construction des outils agricoles, et lors qu'ils en vinrent à étudier sérieusement les besoins des pays étrangers, ils furent généralement à même d'appliquer aux nouveaux problèmes les résultats de l'expérience acquise chez eux.

Par exemple, un modèle de charrue, destiné tout d'abord au labourage des collines dans les terres déboisées du Nord-ouest, s'est trouvé, après quelques modifications de détail pour satisfaire aux coutumes locales, convenir à merveille à certaines parties de l'Amérique du sud où l'état du sol est étonnamment le même. La charrue qui a la plus grande vogue dans les vastes plaines du centre ouest est le modèle que l'on préfère dans l'Afrique du Sud, tandis qu'un autre type de charrue très estimé dans l'ouest a été accepté avec enthousiasme dans la République argentine.

Pour subvenir aux besoins des clients étrangers sans affronter trop de face leurs préjugés tout en leur donnant un article meilleur que ceux dont ils s'étaient servis jusqu'alors, les manufacturiers américains durent adapter une ligne de conduite qui évitait les extrêmes de l'idée britannique qui consiste à n'offrir aux étrangers que les traditionnels modèles anglais —"si vous les voulez, prenez-les: si vous ne les voulez pas, laissez-les,"—et du procédé allemand qui imite exactement les outils de l'endroit. Nos fabricants ne tardèrent pas à reconnaître que c'était une perte d'argent et d'énergie que d'essayer de "faire l'éducation" des clients étrangers et de les obliger à reconnaître que nos types d'outils et nos procédés de les utiliser étaient les meilleurs; ils n'hésitèrent pas à sacrifier aux coutumes et aux préjugés locaux certaines modifications de détail.

Ainsi, pour plaire aux agriculteurs des Indes Britanniques, l'age de la charrue doit être extraordinairement long et le soc comparativement petit. En Ecosse, les agriculteurs ne veulent pas que leurs charrues retournent complètement la bande de terre, comme le font habituellement les nôtres, mais qu'elles la déposent de champ. Grâce à quelques modifications bien entendues, les charrues américaines envoyées en Ecosse se trouvèrent parfaitement adaptées au mode de travail du pays, et leur, légèreté, leur durabilité, l'excellence du travail qu'on peut en obtenir ont fait le reste: les charrues américaines sont aujourd'hui solidement implantées dans toute l'Ecosse.

Dans la grande majorité des cas, les préjugés locaux contre les outils américains résidaient dans les détails plutôt que dans les parties essentielles, et des voyageurs de commerce habiles ne tardèrent pas à faire apporter par les fabricants certaines modifications qui firent qu'on essaya les charrues et qu'un débouché nouveau fut ouvert. Pendant fort longtemps les consommateurs étrangers ne cessèrent de répéter que les machines agricoles américaines, telles que faucheuses, moissonneuses, etc., étaient trop légères pour être durables. Ce ne fut qu'après de longs essais ininterrompus qu'ils furent convaincus que c'étaient les machines construites chez eux qui étaient trop lourdes.

Dans les machines américaines le bois fut employé là où la solidité n'était pas le point essentiel, et dans les pièces d'acier les dimensions et le poids furent soigneusement proportionnés à l'effort; il en résulta que ces machines furent assez solides pour satisfaire à toutes les exigences et aussi durables que les meilleurs, tout en coûtant et pesant moins, quelquefois moitié moins. Dans les machines anglaises et, en général, europeénnes qui occupaient les marchés neutres avant l'avènement des types américains, on empilait littéralement le fer et l'acier sans regarder au prix, sans même regarder à l'utilité. Des pièces qui ne subissaient pas le moindre effort étaient en fer épais d'un pouce. Qu'en résultait-il? C'est qu'il fallait deux, trois, quatre chevaux ou autres animaux de trait pour mettre en mouvement une de ces peu avenantes machines, alors que la même somme de travail pouvait se faire avec une machine américaine légère et n'exigeant qu'une force animale moitié moindre. Ce fait dessilla les yeux des agriculteurs, et l'on peut bien dire sans forfanterie que sous ce rapport, le mode de construction eméricain a révolutionné l'industrie dans le monde entier.

Il va sans dire, toutefois, que nos manufacturiers durent pour prendre pied sur le sol étranger, envoyer des hommes compétents dans chaque place importante. Ces voyageurs de commerce étudièrent d'abord avec soin les outils en usage dans le pays; souvent ils en expédièrent des spécimens aux Etats-Unis afin que les dessinateurs et les inventeurs des fabriques pussent les examiner. Très fréquemment, grâce à sa connaissance parfaite des modèles en usage en Amérique, le voyageur décidait d'un regard que tel modèle déjà fort répandu aux Etats-Unis, pourrait, avec quelques modifications legères, satisfaire aux exigences de l'étranger. Dans ce cas le succès était rapide et comparativement facile.

Dans d'autres cas, cependant, on dut produire un article spécial, construit presque exclusivement d'après le modèle étranger. Même ici, cependant, l'expérience variée acquise aux Etats-Unis fut d'un grand service au constructeur.

Japonais dans le Texas

Le consul américain à Tamsul (ile Formose) informe le gouvernement que les journaux japonais publient une annonce insérée par un Japonais qui va établir une colonie agricole de Japonais dans l'état américain du Texas.

Ce Japonais, dont le nom est Kinzaburo Gaba, dit qu'il va commencer avec 49,000 acres environ de terres à paturage dans le Texas. Il estime que les Japonais ne peuvent réussir, en Amérique, que dans l'agriculture.

Agents de commerce spéciaux

Le dernier Congrès a autorisé la nomination de cinq agents de commerce spéciaux dont les fonctions consisteront à voyager à l'étranger afin d'y étudier l'état du commerce et les moyens de développer davantage le commerce extérieur des Etats-Unis. On a réservé la faible somme de 30,000 dollars pour couvrir les dépenses de ces investigateurs, et le Ministre du Commerce et du travail a été chargé de nommer les cinq agents et de veiller à ce qu'ils puissent partir dès le 1er juillet de la présente année. On annonce maintenant que les agents ont été choisis. Ce sont: MM. Lincoln Hutchinson, professeur à l'Université de Californie, Charles M. Pepper, Harry R. Burrill, Raymond F. Crist et le docteur Edward Bedloe. MM. Burrill et Crist vont en Orient; le professeur Hutchinson, dans l'Amérique du Sud; M. Pepper, au Canada et au Mexique; quant au docteur Bedloe, il doit visiter les Indes occidentales et les pays de l'Amérique centrale et de l'Amérique du Sud avoisinant la mer des Antilles. Ces agents doivent avoir leurs rapports définitifs prêts pour le Congrès en janvier.

Quand en annonça que des agents de ce genre seraient envoyés à l'étranger, tous ceux que la question intéresse espéraient que ce travail serait entrepris d'une manière qui permettrait d'obtenir des résultats de haute valeur. Il est possible, à vrai dire, qu'en dépit des restrictions qu'on leur impose, ces commissaires spéciaux puissent obtenir des renseignements précieux, mais la perspective n'a rien d'attrayant.

En premier lieu la somme d'argent mise à leur disposition est absolument insuffisante: elle ne peut permettre que des recherches très superficielles. Les exportateurs américains qui sont un tant soit peu au courant du commerce d'exportation, ont été littéralement inondés des premiers principes superficiels, cela leur provient de toutes sources, et il est plus qu'inutile de chercher à leur en donner davantage. Il est douteux qu'aucun d'eux puisse tirer aucun profit des observations kinétoscopiques de l'investigateur le plus habile.

En second lieu, le tempts accordé n'est pas suffisant. Il ne le serait pas davantage si ces agents possédaient mille yeux, mille oreilles, mille intelligences et s'ils étaient munis de bottes de sept lieues. Il y a quelque chose de pathétique dans la nouville que deux hommes vont aller dans l'Extrême Orient pour y étudier l'état du commerce, faire un plan qui permettra au commerce américain de s'y multiplier, et retourner, prêts à soumettre au Congrès un rapport détaillé, six mois après leur départ. Or, le voyage seul exige deux mois; il faut bien un autre mois pour la compilation d'un rapport: il ne reste donc que trois mois pour visiter les centres commerciaux de cette moitié de la terre qui semble offrir, en ce moment, les plus riches occasions à l'exportateur américain.

Les instructions données aux agents sont complètes, et il n'y a pas à douter que leur travail sera accompli aussi bien qu'il peut l'être dans les circonstances, mais on ne peut s'empêcher de déplorer que toute l'entreprise soit, dès le début, vouée à la médiocrité, sinon à un échec absolu.—Extrait de *Commercial America*.

Le Canal de Panama

Lorsque, il y a bien des années, la question du premier grand chemin de fer du Pacifique fut discutée pour la première fois, il ne manquait pas de gens qui croyaient que les promoteurs du projet étaient à moitié fous. On ne pouvait s'imaginer que des idées si étranges pussent se réaliser. Au bout de quelques courtes années les grosses machines à vapeur traversaient le Sahara américain et le tunnel des Montagnes Rocheuses, tirant à leur suite des trains de voyageurs et de marchandises, et la distance entre l'Océan Atlantique et l'Océan Pacifique était franchie en quelques jours au lieu des mois qu'il avait fallu jusqu'alors. La réalisation de ce prodige transporta la civilisation dans les solitudes du far-west et fit fleurir comme un jardin les terres désertes de cette vaste étendue de l'Amérique.

Ce fut le commencement de l'extermination des sauvages qui refusaient de se laisser civiliser, et ce fut le premier coup de mort donné au mormonisme qui dut bientôt obéir aux lois du pays et abandonner ses pratiques sacrilèges, cédant ainsi aux meilleures influences apportées dans l'Utah par le chemin defer. La construction de cette voie ferrée a fait beaucoup plus; elle a permis, entre autres choses, et peut-être n'est-ce pas là le moindre des services qu'on lui doit—de profiter de la victoire de l'amiral Dewey par l'intermédiare de la Golden Gate à San Francisco. Sans se chemin defer, il eut été impossible de transporter assez rapidement troupes et munitions pour les envoyer par voie de la mer maintenir l'autorité des Etats-Unis dans les lointaines îles Philippines.

Cette ligne ne cesse de contribuer au développement des richesss de l'ouest. Les dépenses en argent qu'elle a occasionnées, les vies humaines que sa construction a coûtées, ont dès longtemps disparu de la mémoire en face des services éminents qu'elle a rendus et qu'elle ne cesse de rendre à la nation.

Et de nouveau, nous voici aux prises avec un travail herculéen qui promet d'être même plus utile que la construction du premier grand chemin de fer du Pacifique. L'entreprise présente a ceci d'exceptionnel qu'il n'est guère probable qu'elle sera multipliée par la construction d'autres canaux.

La Commission du Canal de Panama s'embarquant pour l'isthme peu hospitalier en cette saison de l'année où les rapports quotidiens nous apprennent quela fièvre jaune y règne sans parler des autres maladies des tropiques, est une preuve suffisante du courage indomptable et de l'énergie que les Américains apportent dans tout ce qu'ils entreprennent. Les hommes qui compovent cette commission sont de beaux spécimens du type américain.

Chacun dans sa partie est un génie du plus haut ordre, et tous savent si bien ce que signifie les. termes entreprise américaine, que pour eux le mot échec n'existe pas. Chacun se rend parfaitement compte des risques que court sa santé, et que la tâche peut fort bien lui coûter la vie, et cependant tous vont bravement de l'avant, chacun va contribuer pour sa quote-part à la réalisation du prodige.

Ils ne semblent guère découragés par la mélancolique histoire des Français sous De Lesseps. Les difficultés innombrables qui se présentent au seuil même de cette entreprise gigantesque sont peut-être les plus grandes que l'homme ait jamais eues à affronter. Mais le travail se fera, non pas, à vrai dire, sans que bien des vies aient été sacrifiées aux influences insalubres presque insupportables pour tous ceux qui ne sont pas nés sous le climat des tropiques.

Les conditions hygiénques, les fruits et les légumes malsains—excepté pour les indigènes inutiles dont l'énergie est consumée par la chaleur—les miasmes des marécages, sont autant de causes de grande mortalité. Les indigènes ne contribueront guère à l'exécution des travaux, car ils ne veulent pas travailler de leurs mains, et leurs cerveaux, obscurs, n'entendent rien à ce problème colossal.

Il faut donc se procurer des hommes ailleurs, et il est facile de comprendre que dans ces conditions quelles que soient les précautions prises, il faudra sacrifier sur l'autel du canal presque autant d'hommes qu'en demanderait l'invasion d'un pays avec une armée bien plus nombreuse que celle que nous avons en ce moment aux Philippines.

Il faudra sacrifier sans doute, en proportion, autant d'officiers que de soldats. Le climat et la maladie n'ont nul respect pour les personnes, et nous perdrons sans doute un grand nombre d'hommes de grande valeur. Des hommes de haute intelligence et possédant les connaissances pratiques requises dans leurs professions vont bientôt devenir la proie des maladies, et les manœuvres le de curcôté, succomberont en grand nombre, en dépit des précautions prises pour leur bien être et desmesures sanitaires que l'on va adopter sans retard.

A considérer le Canal de Panama au point de vue de la grandeur de l'entreprise et des services qu'il rendra au monde entier, il restera peut-être l'œuvre la plus grandiose du vingtième siècle, et, comme toutes les autres conceptions de ce genre, il ne peut être exécuté que grâce à d'immenses sommes d'argent, d'énergie humaine, de talent.

Nos voisins de France ont échoué; la réussite est désormais pour nous une question d'amour-propre, et nous réussirons, dût le creusement de ce canal nous coûter bien plus de millions que l'on ne suppose et le sacrifice d'une armée d'hommes. Les Etats-Unis poussent ferme à la roue du progrès; ils remplissent glorieusement leur mission dans la cause du christianisme et de la civilisation.

Te transpordes récoltes américaines

Pour le transport des récoltes des Etats-Unis, en 1905, il faudra 1,500,000 wagons de marchandises. Le correspondant de Chicago du *Globe-Democrat*, de Saint-Louis, s'exprime ainsi: "Estimant, cette année, l'état de prospérité de l'agriculteur americain en wagons de marchandises, les statisticiens des chemins de fer ont trouvé que le trafic des grains récoltés cette année comprendra 1,500,000 wagons. Si l'on dirigeait vers les marchés tout ce grain à la fois et qu'il fût chargé sur un seul train de chemin de fer, ce train aurait 11,931 milles de long, exclusion faite des locomotives nécessaires pour le tirer. En divisant ce train colossal en fractions de 40 wagons chacune, il faudrait, pour mettre en mouvement ces trains plus petits, 37,500 locomotives, soit 355 milles de machines de traction. Si l'on ajoute ces 355 milles aux 11,931 occupés par les wagons, on obtient un total de 12,286 milles. Ces wagons et locomotives occuperaient à très peu près, quatre lignes de chemin de fer s'étendant de New York à San Francisco. Si l'on n'employait qu'une seule ligne, elle aurait pour longueur la moitié de la circonférence du globe."

Quelque éloquents que soient ces chiffres, le même correspondant dit qu'ils ne donnent qu'une bien faible idée des richesses en maïs, en avoine, en blé, en orge, en seigle, que l'agriculteur américain a extrait de son sol en l'année 1905. Il continue ainsi: "L'évaluation des administrations des chemins de fer est basée sur la quantité de grains qui sera dirigée vers les marchés centraux par les voies ferrées. Il est probable que les grains qui passeront par les chemins defer ne comprendront pas plus du tiers de la production totale. Les deux autres tiers seront transportés aux moulins locaux au moyen de charrettes ou seront consommés sur place par le bétail. Pour contenir la récolte totale de maïs il faudrait un train et des locomotives occupant une étendue de 21,000 milles de voie ferrée, soit l'équivalent de six zones d'or s'étendant de Hell Gate à Golden Gate. C'est dans cette histoire de trésor agricole qu'il faut chercher la raison de l'activité sans précédents avec laquelle les compagnies de chemins de fer de l'ouest se préparent cette année pour le trafic des marchandises. Si l'agriculteur n'avait déjà sous la main une bonne somme d'argent et était contraint de vendre son grain au plus vite, comme il a dû le faire dans certaines années, on peut non sans raison supposer que les chemins de fer seraient absolument encombrés par le trafic des grains."

D'après le même auteur, les statisticiens des chemins de fer estiment que la récolte du blé et de l'avoine dans les états de Minnesota et des deux Dakota s'élève à 326 millions de boisseaux, dont 190 millions se rendront aux marchés par les voies ferrées. D'après les mêmes statisticiens, la récolte totale du maïs s'élèverait à 2 milliards 566 millions de boisseaux, et l'on calcule que, de cette quantité, 756 millions franchiront de plus ou moins grandes distances sur les voies verrées. En admettant que ces chiffres, soient exacts, il y aura 173,000 wagons de blé et d'avoine provenant des trois états mentionnés, soit 4,325 trains de 40 wagons chacun. On estime que le maïs demandera 796,000 wagons, soit 19,900 trains de 40 wagons chacun. À ce trafic déjà fort considérable, il faudra probablement ajouter 17,000 wagons de graine de lin provenant du nord-ouest. Le transport des 1,500,000 wagons de grains de tous genres sur lesquels on compte, représenterait une circulation quotidienne de cent trains de 40 wagons chacun pendant toute l'année, sans en excepter un seul jour.

Tondeuses de gazon pour l'exportation

Nous venons de recevoir un petit livre illustré publié par la Chadborn & Coldwell Manufacturing Company, N. Y. (Etats-Unis d'Amérique) dans lequel sont décrites les tondeuses de gazon que la compagnie fabrique pour l'exportation. C'est en même temps la dernière édition du prix-courant de la compagnie. On y trouve les gravures des divers modèles de tondeuses qu'elle construit.

Depuis trente années que cette compagnie fabrique des tondeuses de gazon, elle s'est appliquée à les adapter au sol et au climat des pays où elles doivent être employées. Aussi trouve-t-on ces outils partout où la civilisation a pénétré.

Dans la Grande Bretagne et dans ses colonies, partout en Europe, les tondeuses de gazon construites par cette compagnie ont eu à lutter contre leurs concurrentes provenant de tous les points du globe, et toujours c'est à elles que le public, gagné par leurs qualités supérieures, a donné la préférence.

Le commerce d'exportation de la compagnie est vaste. Elle donne un soin tout spécial *à* l'emballage et à l'expédition. Il est rare qu'un article arrive à destination endommagé.

Les clients de la compagnie peuvent être assurés que leurs ordres seront exécutés avec soin: adresse, marques spéciales, instructions de tous genres sont minutieusement notées.

L'Export Implement Age se plait à inviter à entrer en correspondance avec cette compagnie ceux de ses lecteurs qui s'intéressent ou qui croient qu'ils s'intéresseront un jour aux tondeuses de gazon.

La compagnie enverra, sur demande, son catalogue et tous les renseignements désirés.

La consommation annuelle de café, aux Etats-Unis, est de 11 livres trois quarts par tête. Celui des autres pays civilisés qui vient en second lieu n'en consomme guère plus de la moitié de cette quantité, et la consommation annuelle de l'Angleterre est inférieure à une livre par tête. Comme buveurs de bière nous occupons le troisième rang (18.28 gallons par tête) et le quatrième comme consommateurs de whiskey. Quant au vin, nous en consommons annuellement près d'un demi-gallon (deux litres) par tête.

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En el Directorio para Compradores, en la primera parte, hallarán nuestros lectores los informes en el idioma español, a fin de que puedan entablas una correspondencia más satisfactoria con nuestros anunciantes.

El Cultivo de la Tierra en Alaska

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travaux, car ils ne veulent pas travailler de leurs mains, et leurs cerveaux, obscurs, n'entendent rien à ce problème colossal.

Il faut donc se procurer des hommes ailleurs, et il est facile de comprendre que dans ces conditions quelles que soient les précautions prises, il faudra sacrifier sur l'autel du canal presque autant d'hommes qu'en demanderait l'invasion d'un pays avec une armée bien plus nombreuse que celle que nous avons en ce moment aux Philippines.

Il faudra sacrifier sans donte, en proportion, autant d'officiers que de soldats. Le climat et la maladie n'ont nul respect pour les personnes, et nous perdrons sans doute un grand nombre d'hommes de grande valeur. Des hommes de haute intelligence et possédant les connaissances pratiques requises dans leurs professions vont bientôt devenir la proie des maladies, et les manœuvres le de curcôté, succomberont en grand nombre, en dépit des précautions prises pour leur bien être et desmesures sanitaires que l'on va adopter sans retard.

A considérer le Canal de Panama au point de vue de la grandeur de l'entreprise et des services qu'il rendra au monde entier, il restera peut-être l'œuvre la plus grandiose du vingtième siècle, et, comme toutes les autres conceptions de ce genre, il ne peut être exécuté que grâce à d'immenses sommes d'argent, d'énergie humaine, de talent.

Nos voisins de France ont échoué; la réussite est désormais pour nous une question d'amour-propre, et nous réussirons, dût le creusement de ce canal nous coûter bien plus de millions que l'on ne suppose et le sacrifice d'une armée d'hommes. Les Etats-Unis poussent ferme à la roue du progrès; ils remplissent glorieusement leur mission dans la cause du christianisme et de la civilisation.

Te transpordes récoltes américaines

Pour le transport des récoltes des Etats-Unis, en 1905, il faudra 1,500,000 wagons de marchandises. Le correspondant de Chicago du *Globe-Democrat*, de Saint-Louis, s'exprime ainsi: "Estimant, cette année, l'état de prospérité de l'agriculteur americain en wagons de marchandises, les statisticiens des chemins de fer ont trouvé que le trafic des grains récoltés cette année comprendra 1,500,000 wagons. Si l'on dirigeait vers les marchés tout ce grain à la fois et qu'il fût chargé sur un seul train de chemin de fer, ce train aurait 11,931 milles de long, exclusion faite des locomotives nécessaires pour le tirer. En divisant ce train colossal en fractions de 40 wagons chacune, il faudrait, pour mettre en mouvement ces trains plus petits, 37,500 locomotives, soit 355 milles de machines de traction. Si l'on ajoute ces 355 milles aux 11,931 occupés par les wagons, on obtient un total de 12,286 milles. Ces wagons et locomotives occuperaient à très peu près, quatre lignes de chemin de fer s'étendant de New York à San Francisco. Si l'on n'employait qu'une seule ligne, elle aurait pour longueur la moitié de la circonférence du globe."

Quelque éloquents que soient ces chiffres, le même correspondant dit qu'ils ne donnent qu'une bien faible idée des richesses en maïs, en avoine, en blé, en orge, en seigle, que l'agriculteur américain a extrait de son sol en l'année 1905. Il continue ainsi: "L'évaluation des administrations des chemins de fer est basée sur la quantité de grains qui sera dirigée vers les marchés centraux par les voies ferrées. Il est probable que les grains qui passeront par les chemins defer ne comprendront pas plus du tiers de la production totale. Les deux autres tiers seront transportés aux moulins locaux au moyen de charrettes ou seront consommés sur place par le bétail. Pour contenir la récolte totale de maïs il faudrait un train et des locomotives occupant une étendue de 21,000 milles de voie ferrée, soit l'équivalent de six zones d'or s'étendant de Hell Gate à Golden Gate. C'est dans cette histoire de trésor agricole qu'il faut chercher la raison de l'activité sans précédents avec laquelle les compagnies de chemins de fer de l'ouest se préparent cette année pour le trafic des marchandises. Si l'agriculteur n'avait déjà sous la main une bonne somme d'argent et était contraint de vendre son grain au plus vite, comme il a dû le faire dans certaines années, on peut non sans raison supposer que les chemins de fer seraient absolument encombrés par le trafic des grains."

D'après le même auteur, les statisticiens des chemins de fer estiment que la récolte du blé et de l'avoine dans les états de Minnesota et des deux Dakota s'élève à 326 millions de boisseaux, dont 190 millions se rendront aux marchés par les voies ferrées. D'après les mêmes statisticiens, la récolte totale du maïs s'élèverait à 2 milliards 566 millions de boisseaux, et l'on calcule que, de cette quantité, 756 millions franchiront de plus ou moins grandes distances sur les voies verrées. En admettant que ces chiffres, soient exacts, il y aura 173,000 wagons de blé et d'avoine provenant des trois états mentionnés, soit 4,325 trains de 40 wagons chacun. On estime que le maïs demandera 796,000 wagons, soit 19,900 trains de 40 wagons chacun. À ce trafic déjà fort considérable, il faudra probablement ajouter 17,000 wagons de graine de lin provenant du nord-ouest. Le transport des 1,500,000 wagons de grains de tous genres sur lesquels on compte, représenterait une circulation quotidienne de cent trains de 40 wagons chacun pendant toute l'année, sans en excepter un seul jour.

Tondeuses de gazon pour l'exportation

Nous venons de recevoir un petit livre illustré publié par la Chadborn & Coldwell Manufacturing Company, N. Y. (Etats-Unis d'Amérique) dans lequel sont décrites les tondeuses de gazon que la compagnie fabrique pour l'exportation. C'est en même temps la dernière édition du prix-courant de la compagnie. On y trouve les gravures des divers modèles de tondeuses qu'elle construit.

Depuis trente années que cette compagnie fabrique des tondeuses de gazon, elle s'est appliquée à les adapter au sol et au climat des pays où elles doivent être employées. Aussi trouve-t-on ces outils partout où la civilisation a pénétré.

Dans la Grande Bretagne et dans ses colonies, partout en Europe, les tondeuses de gazon construites par cette compagnie ont eu à lutter contre leurs concurrentes provenant de tous les points du globe, et toujours c'est à elles que le public, gagné par leurs qualités supérieures, a donné la préférence.

Le commerce d'exportation de la compagnie est vaste. Elle donne un soin tout spécial à l'emballage et à l'expédition. Il est rare qu'un article arrive à destination endommagé.

Les clients de la compagnie peuvent être assurés que leurs ordres seront exécutés avec soin: adresse, marques spéciales, instructions de tous genres sont minutieusement notées.

L'Export Implement Age se plaît à inviter à entrer en correspondance avec cette compagnie ceux de ses lecteurs qui s'intéressent ou qui croient qu'ils s'intéresseront un jour aux tondeuses de gazon.

La compagnie enverra, sur demande, son catalogue et tous les renseignements désirés.

La consommation annuelle de café, aux Etats-Unis, est de 11 livres trois quarts par tête. Celui des autres pays civilisés qui vient en second lieu n'en consomme guère plus de la moitié de cette quantité, et la consommation annuelle de l'Angleterre est inférieure à une livre par tête. Comme buveurs de bière nous occupons le troisième rang (18.28 gallons par tête) et le quatrième comme consommateurs de whiskey. Quant au vin, nous en consommons annuellement près d'un demi-gallon (deux litres) par tête.

EXPORT IMPLEMENT AGE

PARA CIRCULAR EN EL EXTRANJERO SOLAMENTE.

Periódico independiente, dedicado exclusivamente al fomento del comercio de exportación en maquinaria para la Agricultura y lécherias, bombas, molinos de viento, aperos de labranza y suministros á cortijos, haciendas, ingenios de hacer azúcar, sitios de labor etc.

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INTENTIONAL SECOND EXPOSURE

Los Instrumentos Agrícolas Americanos

El secreto del buen éxito fenomenal de los instrumentos agrícolas americanos en el extranjero es, ante todo, su adaptabilidad para las condiciones siempre variables de las tierras, cosechas y climas de los países extranjeros. Los fabricantes americanos, al tratar de corresponder á los muy diversificados requerimientos de nuestro vastísimo país han tenido que lidiar frente á frente con casi todos los problemas posibles en la construcción de los instrumentos de labranza requeridos por el hacendado, y cuando se dedicaron á estudiar las condiciones y requerimientos de los campos extranjeros han podido generalmente aplicar los resultados de su experiencia anterior al resolver los nuevos problemas.

Asi es que un tipo de arado designado originalmente para las labores de colina en los terrenos desmontados del Noroeste, lo hallaron á propósito, con unas pocas y ligeras modificaciones, para acomodahrse á las contumbres locales, y muy adecuado especialmente para ciertas partes de la Amúrica del Sur, que son sorprendentemente semejantes. El arado que adquirió la más extensa popularidad en las regiones centrales del Oeste se halló que es el más satisfactorio para el Sur del Africa, y otro tipo de arado del Oeste se hizo inmediatamente popular en la Argentina.

Para satisfacer los requerimientos de los compradores extranjeros, respetar sus preocupaciones y darles al mismo tiempo un articulo mejor que el que estaban acostumbrados á usar, les fué preciso á los manufactureros americanos adoptar un sistema que consistia en seguir un camino medio entre el extremo de la idea británica que no les ofrecía á los compradores extranjeros sino los estilos tradicionales británicos con la advertencia de "tomarlos ó dejarlos," y el plan de los alemanes de imitar exactemente el instrumento acostumbrado en los respectivos paises. No transcurrió mucho tiempo sin que nuestros fabricantes hallaran que el designio de "educar" á los compradores extranjeros induciéndolos á reconocer la superioridad de los instrumentes de nuestros estilos y de nuestros métodos de emplearlos era un inútil desperdicio de dinero y de energia, si no se concedia mucho en el modo de modificarlos para corresponder á las preocupaciones y costumbres locales.

Asi, para que les convenga á los hacendados de la India británica, ha de ser extremadamente larga la pértiga del arado, y comparativamente pequeña la reja. Los hacendados labradores de Escocia no deseaban que sus arados revolviesen el surco hacia arriba como hacen generalmente los nuestros, sino que solamente los hiciesen formando cantos. Con algún ajuste los arados americanos enviados alli resultaron ser adecuados para la labranza de la manera preferida, y pronto adquirieron una extensa y duradera popularidad por su ligereza, su duración y su eficiencia.

En casi todos los casos se ha probado que las preocupaciones locales contra los instrumentos americanos se referían más bien á sus detalles que á sus puntos esenciales, y los vendedores hábiles pronto pudieron hacer arreglos con los fabricantes para que les hiciesen aquellas ligeras modificaciones, con las que pudiesen someterlos á una prueba favorable en el esen someterlos á una prueba favorable en el pais respectivo y lograr asi su adopción comercial. Por mucho tiempo estuvieron quejándose los labradores extranjeros de las máquinas agricolas americanas, tales como las guadañadoras, cosechadoras, etc., alegando que eran de peso demasiado ligero para ser duraderas. Sólo después de repetidas pruebas, continuadas por largo tiempo, se convencieron de que las máquinas de manufactura extranjera eran en realidad más pesadas de lo que era necesario.

En las máquinas americanas se usa la madera para aquellas partes cuya fortaleza no es esencial, y en las partes de acero se ajusta exactamente el tamaño y el peso á la tensión que han de resistir, con el resultado de que las máquinas han probado ser bastante fuertes para satisfacer todos los requerimientos, y tan duraderas como las mejores, mientras que su costo es menor, pesando á veces menos de una mitad. En las máquinas inglesas y las del Continente europeo, que ocupaban los mercados neutrales antes de la introducción de los tipos de máquinas americanas, se acumulaba literalmente el hierro y el acero sin atender al costo ó á la utilidad. Partes que no tenían que resistir presión ó tensión alguna al funcionar la máquina se hacian de hierro de una pulgada de espesor, y asi sucesivamente. El resultado era que se requerían dos, tres ó cuatro caballos ú otros animales de tiro para tirar de sin exageración que la práctica american en este particular ha revolucionado la industria agrícola del mundo.

Naturalmente, sin embargo, nuestros manufactureros, para relacionarse con los compradores del extranjero, tuvieron que enviar competentes vendedores directamente á cada mercado importante. Esos agentes estudiaron primero detenidamente los instrumentos usados en los países respectivos, remitiendo á menudo muestras de ellos á los inventores y diseñadores de las fábricas para que los examinasen. Muy frecuentemente, con su larga experiencia de los estilos de su país, el exportapericencia con los estilos de su pais, el eportador vió al instante que algún modelo fabricado aqui en grandes cantidades para el comercio de este país podia con alguna ligera modificación servir para satisfacer los requerimientos del extranjero. En semejantes casos pronto y una de esas abultadas y pesadas máquinas, mientras que la misma cantidad de trabajo se podia hacer con una máquina americana más ligera usando la mitad de la fuerza animal. No tardaron mucho los hacendados en comprender semejante ventaja, y se puede decir con comparativa facilidad se logró el buen éxito.

En otros casos, sin embargo, fué necesario producir un articulo especial bajo el plan del instrumento extranjero, en vez de seguir el estilo de este país. Pero aun en esto la variada experiencia del fabricante americano probó serle muy útil con su ayuda.

El Dinero Americano en el Extranjero

Los peritos en las operaciones bancarias de este país con el extranjero declaran que los turistas americanos han durante los últimos cinco años gastado cada año en el extranjero más de $100.000,000. Más de 150,000 excursionistas americanos se cree que han cruzado en esta estación de verano el Atlántico navegando hacia el Este. y el costo de las vacaciones de esos americanos errantes ha ascendido á un promedio de ú1,000 per cabeza, ó un total de unos $150.000,000.

Como una cuarta parte de esa cantidad es necesaria para pagar los pasajes de ida y vuelta por el mar, y una parte de ella vuelve á los Estados Unidos de various modos. El gasto por término medio de ėsos americanos errantes en el extranjero asciende, según los peritos, á tres veces el importe de los pasajes de ida y vuelta á través del Atlántico, resultando un promedio de gasto en el extranjero de $750 por cada turista, ó un total de $112.-000,000 distribuidos en la tierra extranjera. Esa suma sería casi suficiente para pagar en un año las pensiones de los Estados Unidos. Hay sin duda algunas vazones para sentir que muchos de esos que van año tras año á viajar en Europa no inviertan su dinero en conocer algo de su propio pais y de su pueblo fuera de los distritos en que están situados sus hogares.

Acarreo de las Cosechas Americanas

Para el transporte de las cosechas de los Estados Unidos de 1905 se necesitarán, 1.500,000 carros de carga ferro-carrileros. El corresponsal del *Globe-democrat* de San Luis en Chicago dice: "Calculando la prosperidad del hacendado americano este año en unidades de un carro de carga, los estadísticos de ferrocarril concluyen que el total del tráfico de granos, producto de las cosechas de este año, llegará á la enorme cantidad de 1.500,000 carros de carga llenos. Si todo ese grano se pudiese vender simultáneamente y cargarse en un solo tren de carros de carga, ese tren tendría un largo de 11,931 millas, sin contar el largo de las locomotoras necesarias para moverlo. Dividiendo ese inmenso tren en trenes más pequeños de 40 carros de carga cada uno, se requeririan 37,500 locomotoras, ó 355 millas que añ er didas á las 11,931 de carros de carga, resulta un total de 12,280 millas. Para contener los carros y sus máquinas se necesitaría casi todo el espacio de cuatro vías ferreas que se extendiesen entre New York y San Francisco de Californit. La sola vía necesaria se extendería sobre la mitad de la circuferencia de nuestro globo.

Impresivos como son estos guarismos, dice el corresponsal, no empiezan á expresar lo enorme de la riqueza que el hacendado ó labrador americano le ha sacado á la tierra en maiz, avena, trigo, cebada, centeno este año de 1905. Dice este corresponsal: "Los cálculos de los ferrocarrileros estadísticos se limitan á los granos que habrá que transportar á los centros mercantiles por los ferro-carriles. Ni una tercera parte tal vez de los cereales producidos este años verá jamás esos carros de carga; las otras dos terceras partes se acarrearán en carretones ó carretas á los molinos de las respectivas localidades en parte, y en parte serán consumidos por el ganado de las haciendas. Para contener todo el maiz cosechado y desgranado solamente se necesitaria un tren que con sus locomotoras ocupase una vía de 21,200 millas de largo ó seis zonas oríferas que se extendieses desde Hell Gate, New York, hasta el Golden Gate en San Francisco de California. En esta historia de riqueza agrícola se hallará el motivo de las preparaciones sin paralelo que hacen las grandes vías ferreas del Oeste de esta República para el tráfico de esta estación. Si el hacendado americano no estuviese ya bien provisto de dinero efectivo, y se viese obligado á llevar apresuradamente su grano al mercado, como ha tenido que hacer en años anteriores, es razonable suponer que los innumerables ferro-carriles del país se verian ahogados en tráfico de granos."

Según la misma autoridad los estadisticos de ferro-carril, la cosecha de trigo y avena de Minnesota y los dos Estados de Dakota se calculan en 326.000,000 de "bushels" áfanegasó, 190.000,000 de los cuales se transportarán á los mercados por vías ferreas. Ellos calculan la cosecha total de maiz en 2,566.000,000 de "bushels," y esperan tener que transportar por ferro-carril 756.000,000 de "bushels" á más ó menos largas distancias. Concediendo la exactitud de estos guarismos, habrá 173,000 carros cargados de trigo y avena de los tres Estados mencionados arriba, ó 4,325 trenes de 40 carros cada uno. El cálculo acerca del maiz es de 706,000 carros cargados, ó 19,-900 trenes de 40 carros cada uno. Además de esos habrá que cargar 17,000 carros de semilla de cáñamo ó linaza de los Estados del Noroeste. Para mover los 1,500.000 carros de carga que se calcula se requerirán para el transporte de toda clase de granos se necesitarán cien trenes de 40 carros cada uno cada día del año.

La Demanda de Acero

Con respecto al comercio en acero, Charles M. Schwab dijo lo que sigue:

"Yo creo que va á haber una fuerte y continuada demanda de toneladas de acero. España ha decidido reconstruir su armada. Rusia tiene que hacer lo mismo. Los Estados Unidos, Alemania, y casi todas las demás naciones han resuelto adoptar un sistema de construcciones navales. Todo esto significa una extraordinaria demanda de acero de construcción por muchos años sucesivos. El programa de Rusia es hacer una activa campaña de construcciones navales que durará más de quince años. España requerirá casi el mismo tiempo, como también los Estados Unidos, y lo mismo sucederá en Inglaterra y Francia, y en algunas de las Repúblicas de Sud América, el Japón, la China, y otros países en menor pero importante escala.

"Coincidente con este periodo de construcciones navales, ha de ser necesario construir un buen número de buques auxiliares, pues una armada moderna es una máquina que requiere imperiosamente buques talleres para hacer sus reparaciones, barcos hospitales, embarcaciones carboneras, transportes y embarcaciones menores de varias clases. El objeto de todo esto no es necesariamente el de hacer una guerra, sino más bien impedir que haya guerra, al mismo tiempo que estar preparados en caso que sea inevitable una guerra. El Presidente Roosevelt tiene razón, y su opinión ha sido secundada por la del Emperador de Alemania pocas semanas después, y todos los jefes de la Marina y del Ejército estrán de acuerdo con él."

Mr. Schwab es de opinión que el próximo Congreso ha de acordar una ley que conduzca á la reconstrucción de la Marina Mercante Americana. El es de parecer que si nuestros comerciantes han de adelantar en los mercados del mundo debemos tener una marina mercante sobre la cual tremole la bandera americana, y que dé á nuestro país el prestigio en los puertos extranjeros que acompaña la protección de nuestra bandera. El cree también que las compañias ferro-carrileras empiezan á comprender la necesidad de una completa reconstrucción de sus lineas; que hay que construir fundaciones más firmes, mayor número de ramales, mejores y más poderosas máquinas de tracción y más fuerte y sólido material rodante.

Piensa también que dentro de una década habrá que hacer grandes obras y mejoras de corporación, públicas y particulares que requerirán cada vez mayor cantidad de acero. Su idea la funda en parte en el creciente costo de las maderas y la incombustibilidad del acero. El cree que cada dia aumentará más el uso del acero en la construcción de las casas de vivienda, asi como en la de los edificios públicos y de negocios de las ciudades para evitar las tremendas pérdidas causadas por los incendios, que hoy devoran la prosperidad y la riqueza del pueblo y ponen á contribución el comercio y la industria.

Convención de Manufacturesos

La duodécima Convención Anual de la Asociación de Manufactureros de Instrumentos y Vehiculos Agricolas se celebró en Niagara Falls, New York, U. S. A., en los dias 27 y 28 de Sebtiehbre próximo pasado. Esa organización incluye á casi todos los principales fabricantes de instrumentos agrícolas de los Estados Unidos, y sus deliberaciones son de gran importancia para su comercio.

Los fabricantes de instrumentos agrícolas americanos están muy interesados en la cuestión de la reciprocidad comercial con el extranjero, pues las exportaciones de maquinaria para la agricultura procedentes de este país han aumentadn año tras año más que las de ninguna otra clase de productos fabriles.

Mr. C. F. Huhen fué elegido presidente para el año entrante. La Convención se celebrará el año siguiente en Chicago, Ill.

El Sistema Teléfonico Americano

C. J. H. Woodbury, ingeniero asistente de la "American Telephone and Telegraph Co.," leyó recientemente en la Sección Científica y de Artes del Instituo Politéccnico de Brooklyn, una interesante memoria sobre el Sistema Telefónico del Día. Hablando de la extensión del presente sistema, dijo Mr. Woodbury:

"El total de las lineas telefónicas del sistema de Bell en todos los Estados Unidos tiene tres y veintiun centésimos de milla para cada instrumento telefónico, y, excluyendo las lineas de largas distancias, 55 por ciento de sus alambres bajo tierra. Cuando una persona llama por el teléfono á otra en otro teléfono, tiene á su disposición seis y cincuenta y ocho centésimos de milla. Es más barato verdaderahablar que viajar. Los alambres para largas distancias se entrelazan en todo el sistema, constituyendo una unidad desde el Atlántico hasta el lado occidental del Valle del Mississippi, donde la corta abertura de 140 millas será dentro de poco tiempo cerrada con el mismo sistema, uniendo todas las ciudades de la declividad hacia el Pacífico.

"Este crecimiento de las lineas de ese sistema es el resultado del propósito de extender el uso del teléfono hasta cubrir todas las ciudades y poblaciones, por pequeñas que sean, y de poner el teléfono á los más módicos precios al fácil é inmediato alcance de toda persona cuyos recursos le permiten usar los carros de los tranvias urbanos. La vasta extensión que se le ha dado á ese sistema ya en construcción actual lo indica el hecho de que mientras el último censo de la nación menciona 10,602 ciudades, villas, aldeas y poblados, incorporados, en los Estados Unidos, hay comunicaciones telefónicas con 26,128 poblados diferentes, y el continuo crecimiento de las extensiones pospone año tras año el periodo the saturación del servicio telefónico que ha sido frecuentemente pronosticado aun por personas conservadoras."

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"Cuando una persona usa un teléfono de larga distancia tiene á su servicio exclusivo una propiedad de gran valor:—por ejemplo, al hablar desde Boston á Omaha, como lo hace una casa comercial todas las mañanas, el valor del alambre de cobre á su disposición, al precio corriente actual, asciende á $283,000, mientras que al mismo tiempo se requiere el servicio de nueve operadores de los tableros de commutadores eléctricos á lo largo de la linea.

La extensión del servicio telefónico, tanto en número como en el propósito, lo está haciendo una necesidad, cuyo valor es reconocido. El aumento de teléfonos durante el año de 1904 ascendi. á 701,047 y á 712,147 millas de lineas que, con la requerida construcción, ascendió á un costo de $33.456,700, un aumento de 20 por ciento que hizo subir el total del sistema á 4.480,564 teléfonos, que requieren 4.671,038 millas de alambre para alcanzar á todos los que los usan.

Nuestro Comercio de Exportacion

Los datos estadísticos compilados por el Departamento de Comercio y Trabajo de este Gobierno indican que las exportaciones de manufactureas en el año fiscal que acaba de terminar ascendieron á un valor de $543.620,297, contra $452.415,921 en 1904, siendo un aumento de unos $91.000,000.

Las exportaciones fueron no solamente las más grandes anotadas hasta aqui, sino que excedieron á las exportaciones combinadas de toda clase de mercancías del año centenario de 1876, y excedieron en cerca de $140.000,000 al total de las importaciones y exportaciones del país el año en que terminó la Guerra Civil.

El crecimiento de las exportaciones de productos fabriles se muestra que excede con mucho al crecimiento de la población. Entre 30 de los principales artículos exportados, solamente 7 tuvieron diminución comparados con las exportaciones de 1904.

Las manufacturas de hierro y acero forman como una cuarta parte de todas las mercancías exportadas, habiendo importado su valor $134.527,921, contra $111,948,586 el año precedente. En rieles de acero ascendió el aumento á $6.000,000.

Una notable circunstancia es el gran aumento en la exportación de locomotoras para el Japón, habiéndose enviado alli 151 locomotoras en 1905 contra 74 el año anterior. El Japón también hace sus compras acqui de maquinaria eléctrica y herrajes de construcción. Los artefactos de cobre ocupan el segundo lugar en las exportaciones, con un valor de $86,225,291 contra $57,142,081 el año precedente.

Hubo también un aumento en la exportación de aceites minerales, el tercer artículo en importancia, ascendiendo el aumento á más de 100.000,000 de galones, pero permaneció estacionario, á causa de haber bajado su precio. El aceite exportado en 1905 se elevó á más de 951.000,000 de galones, contra 847.000,000. El valor del exportado en 1905 fué de $71.888,117, contra $71.753,552. A la Gran Bretaña é Irlanda se enviaron 221.000,000 de galones; á Alemania 147.000,000; á los Paises Bajos 117.000.000. Solamente unos 55.000,000 de galones se exportaron para la América del Sur.

Los géneros de algodón ofrecen una de las sorpresas de nuestras exportaciones, habiendo aumentado su importe de $22.403,571 en 1904 á $49,666,080 el año que acaba de finalizar.

Para la China se embarcaron unos 400.000,000 de yardas más que el año próximo pasado en que la exportación de este artículo fué de 769 millones de yardas, y el valor de nuestra exportación de dichos géneros á aquel país subió de unos $4,000,000 en 1905 á $27,750,000 en 1905. El Japón fué la única otra nación que muestra un gran aumento, llegando el total de sus compras á 16.000,000 de yardas en 1905 contra 440,000 yardas en 1902.

Las manufacturas de cuero, que forman el cuarto artículo en importancia en la lista de las exportaciones, ofrecieron un aumento por valor de unos $4.000,000. En esta clase también se acredita al Japón el principal aumento.

La Oficina del Trabajo en Washington ha coleccionado datos estadísticos que demuestran un gran aumento en el costo de manutención de 1890 á esta parte. El precio por mayor por término medio de los productos de los granos en 1904 era 26.2 por ciento mayor que en el periodo de 1890 á 1899. De 52 artículos inclusos bajo la clasificación de alimentos, se demuestra que en 1904 habían aumentado los precios de todos, exceptuando 14, comparados con el promedio de sus precios de 1890 á 1899. De 70 artículos agrupados bajo el título de Ropa, se demuestra que el precio por término medio, en 1904 fué 9.8 por ciento mayor que en 1890 á 1899. La tabla de los combustibles indica que el precio por término medio en 1904 fué 30.6 por ciento más alto que en el periodo de 1890 á 1899.

EXPORT IMPLEMENT AGE

NUR FÜR'S AUSLAND BESTIMMT.

Ein unabhängiges Blatt, das ausschliesslich dem Exporthandel in landwirtschaftlichen Maschinen, Pumpen, Windmotoren und sämmtlichen Artikeln der Land- und Milchwirtschaft gewidmet ist.

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Die Landwirthschaft in Alaska

Es ist nich leicht denkbar dass die Vereinigten Staaten Exportgeschäfte in Ackerbaugeräthen in Alaska haben könnten—und dennoch ist es wirklich der Fall. Eine der letzten Ausgaben des "Post Intelligencer," welcher in Seattle, Wash., erscheint, sagt wie folgt:

"Von einem Standpunkte aus ist die interessanteste Thatsache in unserer Konferenz mit Alaska im ersten Monate des gegenwärtigen Frühjahres, dass Ackerbaugeräthe im Werthe von 596 Dollar nach diesem Territorium verschifft wurden. Es giebt noch einige Menschen in Alaska (und eine gehörige Menge derselben irgendwo anders), welche über die Idee lachen dürften, dass in eben diesem Territorium der Ackerbau sich entwickeln könne—nichtsdesto weniger schreitet diese Entwickelung ununterbrochen fort. Unter den Posten welche das "März Summary of Commerce and Finance" von dem Handelsministerium herausgegeben, befindet sich unter der Rubrik der "Expeditionen nach Alaska" folgendes Verzeichnis: 'Pflüge und Kultivatoren, sowie dazu gehörige Theile, 337 Dollar.' Diese Zahlen sind für die neun Monate welche mit dem 31. März endigen.

Es ist natürlich anzunehmen, dass Pflüge eine gewisse Verwendung in der Goldgräberei in Alaska finden würden sowie auch in der Konstruktion von hydraulischen Gräben, und wurden diese Pflüge meistens für obigen Zweck nach diesen Territorien exportirt und nicht für den Ackerbau. Es ist indes Thatsache dass Mähmaschinen im Werthe von 340 Dollar nach Alaska in denselben neun Monaten verschifft wurden und es hörte wohl Niemand noch davon, dass Mähmaschinen in Bergwerken oder zu irgend einem andern Zweck als zum Grasschneiden verwendet werden könnten. Unter der Rubrik 'Allerhand landwirthschaftliche Geräthe und dazu gehörige Theile' scheint es, dass diese Sendungen im März allein sich auf 424 Dollar beliefen. Erntemaschinen im Werthe von 124 Dollar wurden in denselben Monaten dorthin verschifft. Eine der in Valdez herausgegebenen Zeitungen veröffentlichte kürzlich einen Artikel über das Heumachen in Alaska und riet unternehmungslustigen Personen das Gras in grösserem Masstabe zu trocknen, um es nächsten Winter an die vorüberziehenden Reisenden zu verkaufen. Es ist eine Thatsache, dass vorigen Sommer eine ziemlich grosse Menge Heues in dem Territorium produzirt wurde und dass es dem Manne welcher dasselbe präparirte eine beträchtliche Summe einbrachte. Das von aussen hereingebrachte Heu kostet in Alaska manchmal 200 Dollar per Ton und mehr.

Der Handelsbericht für den März zeigt dass die Geschäfte in Alaska in diesem Frühjahr einen grossen Aufschwung genommen haben. Die Sendungen aller Art Waaren nach dem Territorium beliefen sich in März auf 611.691 Dollar gegen 481.849 Dollar desselben Monats vorigen Jahres und diese Sendungen werden wahrscheinlich um ein Bedeutendes zunehmen, sobald einmal die Schiffahrt nördlich von Dutch Harbor offen ist. In den ersten neun Monaten dieses Finanzjahres wurden nach dem Territorium Waaren im Werthe von 6.184.198 Dollar verschifft. Dies war beinahe 1.600.000 Dollar mehr als die Sendungen in den ersten neun Monaten des Finanzjahres 1904, in welchem die Totalsumme 4.591.463 Dollar ausmachte.

Das Getreide in dem Handel nach dem Süden war nicht beträchtlich, aber die schnell wachsenden Sendungen nach dem Norden sind bedeutungsvoll für das grössere Konsumptionsvermögen des Volkes im nördlichen Territorium. Im März wurden die Gütersendungen von Alaska auf 119.009 Dollar geschätzt, gegen 113.217 Dollar im März 1904. In den ersten drei Vierteln des Finanzjahres machten die über den Süden gehenden Sendungen nach den Vereinigten Staaten 10.232.638 Dollar aus, gegen die 9.905.124 Dollar derselben Monate des Finanzjahres von 1904.

Das Telephonwesen in Amerika

Zur Zeit des jüngst in Australien abgehaltenen Kongresses der "Internationalen Elektriker" gab Herr John Hesketh, elektrischer Ingenieur des Postamt-Departements, des Staates Queensland, in einem Interview mit dem Vertreter des Londoner "Electrical Engineer" einen schmeichelhaften Bericht, welcher den Standpunkt des Telephonwesens in den Vereinigten Staaten klarthut. Herr Hesketh bemerkte: "Amerika leitet heute ganz ohne Zweifel die ganze Welt in der allgemeinen Entwickelung des Telephonwesens, d. h. nicht allein in der Telephon Nutzniessung des Publikums sondern auch in der technischen Entwickelung dieser Industrie. Die Leistungsfähigkeit des heutigen Fernsprechers sowie das ganze ihm zu Grunde liegende Ingenieurwesen hat sich in Amerika zur höheren Entwickelung emporgeschwungen wie irgendwo sonst in der Welt. Dieser Erfolg zeigt sich auf jedem Schritt deutlich genug und die gediegenste Arbeitsthätigkeit in Europa wird nur dort zustande gebracht, wo amerikanische Erfahrung richtig befolgt und ausgeführt wird. Nach der allgemeinen Telephonentwickelung in Amerika zu urtheilen, bedient sich das amerikanische Publikum im ganzen Grossen mehr und viel lieber des Fernsprechers als es die Völker Europas thun. Das Publikum hier ist weit schneller bereit sich jeder neuen Erfindung und jeder Dienstverbesserung anzupassen und von jeder Zunahme in der Telephonfazilität unbedingten Gebrauch zu machen. Wie sehr die Telephonverbindung in den Vereinigten Staaten sich ausgedehnt hat diene das folgende Beispiel: Während meiner ausgedehnten Reisen schlief ich in keinem einzigen Hotel worin nicht ein Fernsprecher in meinem Zimmer—nicht allein für den Stadtverkehr, sondern auch für den Verkehr mit den Vorstädten und für lange Distanz—angebracht war. Es ist für den Reisenden von grosser Bequemlichkeit wenn er vom Zimmer seines Hotels überall im ganzen Lande hin- und hertelephoniren kann. Die Telephonentwickelung hat in den amerikanischen Städten ein Stadium erreicht, welches in den meisten europäischen Ländern kaum begriffen werden kann. In einem Orte fand ich eine derartige Entwickelung, dass auf je hundert Einwohner 23 Fernsprecher zu verzeichnen standen. In den grossen Städten wie San Francisco sind zwölf Fernsprecher auf je hundert Einwohner. Die jährliche Zunahme der Fernsprecher ist im flotten Wachsen begriffen und scheint es als ob kein Ende dieses Wachsthums in Sicht

El Sistema Teléfonico Americano

C. J. H. Woodbury, ingeniero asistente de la "American Telephone and Telegraph Co.," leyó recientemente en la Sección Cientifica y de Artes del Instituo Politécnico de Brooklyn, una interesante memoria sobre el Sistema Telefónico del Dia. Hablando de la extensión del presente sistema, dijo Mr. Woodbury:

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"Este crecimiento de las lineas de ese sistema es el resultado del propósito de extender el uso del teléfono hasta cubrir todas las ciudades y poblaciones, por pequeñas que sean, y de poner el teléfono á los más módicos precios al fácil é inmediato alcance de toda persona cuyos recursos le permiten usar los carros de los tranvias urbanos. La vasta extensión que se le ha dado á ese sistema va en construcción actual lo indica el hecho de que mientras el último censo de la nación menciona 10,602 ciudades, villas, aldeas y poblados, incorporados, en los Estados Unidos, hay comunicaciones telefónicas con 26,128 poblados diferentes, y el continuo crecimiento de las extensiones pospone año tras año el periodo the saturación del servicio telefónico que ha sido frecuentemente pronosticado aun por personas conservadoras."

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La extensión del servicio telefónico, tanto en número como en el propósito, lo está haciendo una necesidad, cuyo valor es reconocido. El aumento de teléfonos durante el año de 1904 ascendió á 701,047 y á 712,147 millas de lineas que, con la requerida construcción, ascendió á un costo de $33,456,700, un aumento de 20 por ciento que hizo subir el total del sistema á 4,480,564 teléfonos, que requieren 4,671,038 millas de alambre para alcanzar á todos los que los usan.

Nuestro Comercio de Exportacion

Los datos estadisticos compilados por el Departamento de Comercio y Trabajo de este Gobierno indican que las exportaciones de manufactureas en el año fiscal que acaba de terminar ascendieron á un valor de $543,620,-207, contra $452,415,021 en 1904, siendo un aumento de unos $91,000,000.

Las exportaciones fueron no solamente las más grandes anotadas hasta aqui, sino que excedieron á las exportaciones combinadas de toda clase de mercancias del año centenario de 1876, y excedieron en cerca de $140,000,000 al total de las importaciones y exportaciones del pais el año en que terminó la Guerra Civil.

El crecimiento de las exportaciones de productos fabriles se muestra que excede con mucho al crecimiento de la población. Entre 30 de los principales artículos exportados, solamente 7 tuvieron diminución comparados con las exportaciones de 1904.

Las manufacturas de hierro y acero forman como una cuarta parte de todas las mercancias exportadas, habiendo importado su valor $134,527,921, contra $111,948,586 el año precedente. En rieles de acero ascendió el aumento á $6,000,000.

Una notable circumstancia es el gran aumento en la exportación de locomotoras para el Japón, habiéndose enviado alli 151 locomotoras en 1905 contra 74 el año anterior. El Japón también hace sus compras acqui de maquinaria eléctrica y herrajes de construcción. Los artefactos de cobre ocupan el segundo lugar en las exportaciones, con un valor de $86,225,291 contra $57,142,081 el año precedente.

Hubo también un aumento en la exportación de aceites minerales, el tercer articulo en importancia, ascendiendo el aumento á más de 100,000,000 de galones, pero permaneció estacionario, á causa de haber bajado su precio. El aceite exportado en 1905 se elevó á más de 951,000,000 de galones, contra $47,000,000. El valor del exportado en 1905 fué de $71,888,-117, contra $71,753,552. A la Gran Bretaña é Irlanda se enviaron 221,000,000 de galones; á Alemania 147,000,000; á los Paises Bajos 117,000,000. Solamente unos 55,000,000 de galones se exportaron para la América del Sur.

Los géneros de algodón ofrecen una de las sorpresas de nuestras exportaciones, habiendo aumentado su importe de $22,403,571 en 1904 á $40,666,080 el año que acaba de finalizar.

Para la China se embarcaron unos 400,000,-000 de yardas más que el año próximo pasado en que la exportación de este articulo fué de 700 millones de yardas, y el valor de nuestra exportación de dichos géneros á aquel pais subió de unos $4,000,000 en 1905 á $27,750,000 en 1905. El Japón fué la única otra nación que muestra un gran aumento, llegando el total de sus compras á 16,000,000 de yardas en 1905 contra 440,000 yardas en 1902.

Las manufacturas de cuero, que forman el cuarto artículo en importancia en la lista de las exportaciones, ofrecieron un aumento por valor de unos $4,000,000. En esta clase también se acredita al Japón el principal aumento.

La Oficina del Trabajo en Washington ha coleccionado datos estadisticos que demuestran un gran aumento en el costo de manutención de 1890 á esta parte. El precio por mayor por término medio de los productos de los granos en 1904 era 26.2 por ciento mayor que en el periodo de 1890 á 1899. De 52 articulos inclusos bajo la clasificación de alimentos, se demuestra que en 1904 habian aumentado los precios de todos, exceptuando 14, comparados con el promedio de sus precios de 1890 á 1899. De 70 articulos agrupados bajo el título de Ropa, se demuestra que el precio por término medio, en 1904 fué 9.8 por ciento mayor que en 1890 á 1899. La tabla de los combustibles indica que el precio por término medio en 1904 fué 30.6 por ciento más alto que en el periodo de 1890 á 1899.

INTENTIONAL SECOND EXPOSURE

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Die Landwirthschaft in Alaska

Es ist nich leicht denkbar dass die Vereinigten Staaten Exportgeschäfte in Ackerbaugeräthen in Alaska haben könnten—und dennoch ist es wirklich der Fall. Eine der letzten Ausgaben des "Post Intelligencer," welcher in Seattle, Wash., erscheint, sagt wie folgt:

"Von einem Standpunkte aus ist die interessanteste Thatsache in unserer Konferenz mit Alaska im ersten Monate des gegenwärtigen Frühjahres, dass Ackerbaugeräthe im Werthe von 596 Dollar nach diesem Territorium verschifft wurden. Es giebt noch einige Menschen in Alaska (und eine gehörige Menge derselben irgendwo anders), welche über die Idee lachen dürften, dass in eben diesem Territorium der Ackerbau sich entwickeln könne—nichtsdesto weniger schreitet diese Entwickelung ununterbrochen fort. Unter den Posten welche das "März Summary of Commerce and Finance" von dem Handelsministerium herausgegeben, befindet sich unter der Rubrik der "Expeditionen nach Alaska" folgendes Verzeichnis: 'Pflüge und Kultivatoren, sowie dazu gehörige Theile, 337 Dollar.' Diese Zahlen sind für die neun Monate welche mit dem 31. März endigen.

Es ist natürlich anzunehmen, dass Pflüge eine gewisse Verwendung in der Goldgräberei in Alaska finden würden sowie auch in der Konstruktion von hydraulischen Gräben, und wurden diese Pflüge meistens für obigen Zweck nach diesen Territorien exportirt und nicht für den Ackerbau. Es ist indes Thatsache dass Mähmaschinen im Werthe von 340 Dollar nach Alaska in denselben neun Monaten verschifft wurden und es hörte wohl Niemand noch davon, dass Mähmaschinen in Bergwerken oder zu irgend einem andern Zweck als zum Grasschneiden verwendet werden könnten. Unter der Rubrik 'Allerhand landwirthschaftliche Geräthe und dazu gehörige Theile' scheint es, dass diese Sendungen im März allein sich auf 424 Dollar beliefen. Erntemaschinen im Werthe von 124 Dollar wurden in denselben Monaten dorthin verschifft. Eine der in Valdez herausgegebenen Zeitungen veröffentlichte kürzlich einen Artikel über das Heumachen in Alaska und riet unternehmungslustigen Personen das Gras in grösserem Masstabe zu trocknen, um es nächsten Winter an die vorüberziehenden Reisenden zu verkaufen. Es ist eine Thatsache, dass vorigen Sommer eine ziemlich grosse Menge Heues in dem Territorium produzirt wurde und dass es dem Manne welcher dasselbe präparirte eine beträchtliche Summe einbrachte. Das von aussen hereingebrachte Heu kostet in Alaska manchmal 200 Dollar per Ton und mehr.

Der Handelsbericht für den März zeigt dass die Geschäfte in Alaska in diesem Frühjahr einen grossen Aufschwung genommen haben. Die Sendungen aller Art Waaren nach dem Territorium beliefen sich in März auf 611.691 Dollar gegen 481.849 Dollar desselben Monats vorigen Jahres und diese Sendungen werden wahrscheinlich um ein Bedeutendes zunehmen, sobald einmal die Schiffahrt nördlich von Dutch Harbor offen ist. In den ersten neun Monaten dieses Finanzjahres wurden nach dem Territorium Waaren im Werthe von 6.184.198 Dollar verschifft. Dies war beinahe 1.600.000 Dollar mehr als die Sendungen in den ersten neun Monaten des Finanzjahres 1904, in welchem die Totalsumme 4.591.463 Dollar ausmachte.

Das Getreide in dem Handel nach dem Süden war nicht beträchtlich, aber die schnell wachsenden Sendungen nach dem Norden sind bedeutungsvoll für das grössere Konsumptionsvermögen des Volkes im nördlichen Territorium. Im März wurden die Gütersendungen von Alaska auf 119.009 Dollar geschätzt, gegen 113.217 Dollar im März 1904. In den ersten drei Vierteln des Finanzjahres machten die über den Süden gehenden Sendungen nach den Vereinigten Staaten 10.232.-638 Dollar aus, gegen die 9.905.124 Dollar derselben Monate des Finanzjahres von 1904.

Das Telephonwesen in Amerika

Zur Zeit des jüngst in Australien abgehaltenen Kongresses der "Internationalen Elektriker" gab Herr John Hesketh, elektrischer Ingenieur des Postamt-Departements, des Staates Queensland, in einem Interview mit dem Vertreter des Londoner "Electrical Engineer" einen schmeichelhaften Bericht, welcher den Standpunkt des Telephonwesens in den Vereinigten Staaten klarthut. Herr Hesketh bemerkte: "Amerika leitet heute ganz ohne Zweifel die ganze Welt in der allgemeinen Entwickelung des Telephonwesens, d. h. nicht allein in der Telephon Nutzniessung des Publikums sondern auch in der technischen Entwickelung dieser Industrie. Die Leistungsfähigkeit des heutigen Fernsprechers sowie das ganze ihm zu Grunde liegende Ingenieurwesen hat sich in Amerika zur höheren Entwickelung emporgeschwungen wie irgendwo sonst in der Welt. Dieser Erfolg zeigt sich auf jedem Schritt deutlich genug und die gediegenste Arbeitsthätigkeit in Europa wird nur dort zustande gebracht, wo amerikanische Erfahrung richtig befolgt und ausgeführt wird. Nach der allgemeinen Telephonentwickelung in Amerika zu urtheilen, bedient sich das amerikanische Publikum im ganzen Grossen mehr und viel lieber des Fernsprechers als es die Völker Europas thun. Das Publikum hier ist weit schneller bereit sich jeder neuen Erfindung und jeder Dienstverbesserung anzupassen und von jeder Zunahme in der Telephonfazilität unbedingten Gebrauch zu machen. Wie sehr die Telephonverbindung in den Vereinigten Staaten sich ausgedehnt hat diene das folgende Beispiel: Während meiner ausgedehnten Reisen schlief ich in keinem einzigen Hotel worin nicht ein Fernsprecher in meinem Zimmer—nicht allein für den Stadtverkehr, sondern auch für den Verkehr mit den Vorstädten und für lange Distanz—angebracht war. Es ist für den Reisenden von grosser Bequemlichkeit wenn er vom Zimmer seines Hotels überall im ganzen Lande hin- und hertelephoniren kann. Die Telephonentwickelung hat in den amerikanischen Städten ein Stadium erreicht, welches in den meisten europäischen Ländern kaum begriffen werden kann. In einem Orte fand ich eine derartige Entwickelung, dass auf je hundert Einwohner 23 Fernsprecher zu verzeichnen standen. In den grossen Städten wie San Francisco sind zwölf Fernsprecher auf je hundert Einwohner. Die jährliche Zunahme der Fernsprecher ist im flotten Wachsen begriffen und scheint es als ob kein Ende dieses Wachsthums in Sicht ist. Es ist wohl leicht möglich, dass mit trefflicher Dienstleistung und mässigen Raten eine zehnprozentige Entwickelung im Telephonwesen erwartet werden darf, die amerikanischen Telephonbeamten sehen sogar einer möglichen Entwickelung von 20 Proz. der Einwohnerzahl mit Zuversicht entgegen. Die Hauptfaktoren welche zum Resultate ihrer Erwartungen leiten sind, jedoch, tüchtige Dienstleistung, ein mässiger Tarif und eine vollkommene Ausbildung des Publikums in der Wichtigkeit des Telephonwesens für den allgemeinen Bedarf." Herr Hesketh glaubt, dass sich die automatische Telephonmaschine hoch am Telephonorizont erhebt.

Die Amerikaner in China

Unter dem Schutze einer kaiserlichen Konzession baute die "American China Development Co." eine Eisenbahnlinie in China, welche von Kanton, im Süden, nach Hankow, am Yangtse-Kiang Flusse, eine Distanz von ungefähr 800 Meilen, gehen soll. Diese Gesellschaft hat kürzlich eine Strecke von Kanton nach Samshui, eine Distanz von 29 Meilen, vollendet. An dem für die Eröffnungsfeikerlichkeiten festgesetzten Tage, unter dem Lärm der Dampfpfeifen, unter Glockengeläute und dem Schlage der Tam-Tams, sowie dem Knallen der von den ausländischen Konsulen abgefeuerten Racketten, bestiegen die chinesischen Beamten und eine Menge wohlwollender Freunde den ersten Zug welcher die neuerbaute Linie befahren sollte und eröffneten dadurch eine neue Aera in dem Fortschritte und Gedeihen dieses grossen Reiches. Diejenigen Chinesen, welche mit Ausländern schon in Berührung kamen, und die Wohlthaten der modernen Einrichtungen bereits empfunden haben, machen gern Gebrauch von dieser Neuerung und patronisiren die im Betriebe stehende Linie, was als ein Vorgeschmack von dem finanziellen Erfolge anzusehen ist, welcher durch die Vollendung der Hauptbahnlinie von China erreicht werden wird. Die Strecke von elf Meilen nach Tat-Shan befördert täglich mehr als viertausend Passagiere von Morgen bis zum Abend, was ein wirklich erstaunliches Resultat ist. Die nach Honkow projecktirte Linie berührt den reichsten und ertragfähigsten Theil des Reiches und wird wegen der absoluten Sicherheit, welche sie den Verladern bietet, nicht nur eine Wohlthat für alle Klassen des Handels sein, sondern verspricht auch eine Quelle grosser Einkünfte für die Aktionäre dieser gewagten Unternehmung zu werden.

Mehr als zweitausend geschickte Arbeiter haben die Arbeit in den französischen Seidenfabriken von Roubaix und Turcoing innerhalb eines Jahres aufgegeben und sich in den Vereinigten Staaten angesiedelt.

Amerikanische Arbeiter

In einer jüngst von Herrn John Moseley, Chef der Moseley Industrial-Kommission von Grossbritanien (eine aus dreiundzwanzig englischen Herren bestehende Körpersschaft welche letztes Jahr die Vereinigten Staaten besuchten behufs Näherkennenlernung der Industrialmethoden dieses Landes) zu Leeds gehaltenen Rede äusserte er sich wie folgt:

"Amerika entwickelt sich mehr und mehr als Fabrikationsland. Nur wenige Leute die nicht selbst mit offenen Augen beobachtet haben, können diese Thatsache vollkommen anerkennen. In einem einzigen Menschenalter hat Amerika sich von einem Ackerbaugemeinwesen zu einem Fabrikationslande erster Art entwickelt. In sich selbst besitzt Amerika jede Bodenbeschaffenheit, jedes Klima und alle Produkte die ein grosses Land bilden. Amerika allein ist sich stets bewusst gewesen, was eine unentgeltliche Schulerziehung bedeute und müssen, in der That, viele seiner Erfolge daraufhin allein zurückzuführen sein.

"Wir in England fabrizirten für die ganze Welt—doch bildeten wir uns in unserer blinden Unwissenheit ein, dass die ganze übrige Welt zu fabriziren unfähig wäre, weil wir die einzigen Fabrikanten für alle waren. Jetzt beginnt ein unangenehmes Erwachen. Angeregt von einer erleuchteten Nation hat Amerika die Wissenschaft hinangezogen um seine industriellen Probleme besser ausarbeiten zu können und sich in der Weise in der vordersten Reihe emporgeschwungen. Wohl erkennt es Amerika heute an, dass Erfolg dieses Verdienst gekrönt hat—es fährt fort seiner Menschheit dieselbe Behandlung angedeihen zu lassen, die wir nur unseren Thieren gewähren. Wer den grössten Nutzen von einem Pferd erzielen will, muss es gut füttern, in guter Beschaffenheit erhalten—dasselbe lässt sich auch von menschlichen Wesen sagen. Wer den besten Nutzen von einem Arbeiter erhalten will, soll und muss ihm die übliche Berücksichtigung, den Respect angedeihen lassen, ihm gut bezahlen und den wohlverdienten Lohn für seine Arbeit ertheilen.

"In Amerika werden Vorschläge berücksichtigt und wenn ein amerikanischer Arbeiter etwas zu sagen hat, wird er nicht abgewiesen oder verachtet. Es ist wahrlich eine Begeisterung den atlantischen Ocean zu kreuzen und mit eigenen Augen zu sehen, was der Fortschritt für die Besserung der Menschheit dort gethan hat. Wenn auch wir besser fortschreiten und in Zukunft gedeihen wollen mit unseren enormen Möglichkeiten, so brauchen wir nur ein Blatt aus dem Buche Amerika's herauszunehmen.

Eine Nation von Konsumenten

Amerika schreitet mit raschen Schritten dem Punkte nahe, wo es allein alle seine Bodenerzeugnisse verzehren und nichts oder nur wenig für den Export übrig lassen wird. Dies ist der Fall mit Weizen und Mehl, indem der grösste Theil dieser Produkte augenblicklich schon im Lande selbst konsumirt wird. Seit 1878 fiel der jährliche Export von Weizen bis zum letzten Jahre—das Mehl als Weizen miteingerechnet—nur zweimal unter 100 Millionen Scheffel und dann nicht viel darunter. Das schlechteste Jahr war 1889, wo 88.600,740 Scheffel nach auswärts gingen, während die Durchschnittsausfuhr in allen diesen Jahren sicher 150.000,000 Scheffel und in den meisten Jahren wohl 200.000,000 Scheffel betrug. Im letzten Finanzjahre wurden kaum 43.797.786 Scheffel ausgeführt und nur 7.945,786 Fässer Mehl im Vergleich mit 19.716,484 in 1903; 17.759.203 in 1902 und 16.929,550 in 1904.

Nach dem *Springfield Republican* wird die Frage aufgeworfen, ob es so weiter gehen soll oder nicht. Um so schärfer tritt diese Frage hervor, seit die Vereinigten Staaten ein so wichtiger Faktor in der Verproviantirung des westlichen Europas wurden. Nach den Produktionsaufstellungen des Ackerbauministeriums war die Weizenernte des Landes im letzten Jahre obwohl bedeutend geringer als die der vorhergegangenen drei Jahre, dennoch etwas grösser als in den Jahren 1900, 1899, oder 1897 und doch betrug der Weizenexport in jenen Jahren mehr als 200.000,000 Scheffel, während auf die grössere Ernte im Jahre 1904 weniger als 44.000,000 Scheffel exportirt wurden.

Dies will zuvörderst bedeuten, dass die rasche Industrie-Entwickelung einen einheimischen Bedarf an Bodenerzeugnissen hervorgerufen hat, wie derselbe seinesgleichen in der nationalen Geschichte noch nie hatte und im Laufe der Zeit wird der Export von Brotstoffen immer geringer und der einheimische Verbrauch immer grösser werden. Dies ist der Grund warum der einheimische Handel Amerikas der grösste in der ganzen Welt geworden ist. Mit dem steigenden Wachsthum der Bevölkerung—wozu eine beispiellose Einwanderung beiträgt—werden die Vereinigten Staaten sehr bald als die Erzeuger von nicht mehr Brodstoffen dastehen, als für ihre eigene Bevölkerung benöthigt wird. Das Land hier ist nicht mehr fast ausschliesslich ackerbautreibend und macht rasch Fortschritte in der anderen Richtung, als eine grosse industrielle Nation, wodurch dem Landwirth ein Markt vor der eigenen Thüre für Alles was er imstande ist zu bauen, geboten wird.

Spezielle Handelsagenten

Im letzten Kongresse wurde die Ernennung von fünf speziellen Handelsagenten authorisirt, welche ins Ausland geschickt werden sollten, um die kommerziellen Verhältnisse und die besten Methoden für die Förderung des auswärtigen Handels mit den Vereinigten Staaten ausfindig zu machen. Ein kleiner Fond von 30,000 Dollar wurde zur Bestreitung der Auslagen ausgesetzt und der Sekretär des Handels und Arbeitsbetriebs Ministeriums beauftragte die fünf Agenten zu ernennen, und die nöthigen Vorkehrungen für deren Abreise am ersten Juli zu treffen. Es ist soeben bekannt gemacht worden, dass die Agenten ausgewählt wurden und die folgenden Herren in sich schliessen: Professor Lincoln Hutchinson, von der Universität von Kalifornien: Charles M. Pepper, Harry R. Burrill, Raymond F. Christ und Dr. Edward Bedloe. Die Herren Burrill und Christ gehen nach dem Orient; Professor Hutchinson nach Süd-Amerika; Herr Pepper nach Kanada und Mexiko und Herr Dr. Bedloe nach Westindien und den Süd- und Central-Amerikanischen Staaten in der karaibischen See. Die betreffenden Agenten sollen ihre definitiven Berichte in Januar für den Kongress fertig haben.

Als die Absicht solche Agenten auszuschicken bekannt wurde, hoffte Jeder, der sich für diese Aufgabe interessirte, dass man die Arbeit in einer Weise in Angriff nehmen würde, durch welche die Erlangung wirklich werthvoller Resultate von solchen Nachforschungen ermöglicht wäre. Es ist sogar jetzt noch wahrscheinlich—gewisse augenscheinliche Beschänkungen eingerechnet—dass diese Kommissionäre im Stande sein werden Auskünfte einzuholen, welche der Mühe werth sind aufgezeichnet zu werden, aber die Aussichten sind nicht sehr versprechend.

In erster Linie ist der dazu ausgesetzte Geldbetrag gänzlich ungenügend für etwas mehr als die oberflächlichsten Nachforschungen. Amerikanische Exporteure, welche überhaupt etwas vom Exportgeschäft verstehen, wurden mit den oberflächlichen ersten Ergebnissen von verschiedenen Quellen so überschüttet, dass sie mit dieser Art von Auskünften ganz durchdrungen sind. Es ist daher zweifelhaft, ob Vielen davon mit den kinetoscopischen Beobachtungen des scharfsinnigsten Beobachters wesentlich gedient wäre.

In zweiter Linie ist für die Arbeit ausgesetzte Zeit nothwendigerweise ein Hindernis für die Agenten eingetreten und selbst wenn sie mit tausend Augen, Ohren und Verstandskräften ausgestattet wären und mit Siebenmeilenstiefeln versehen sein könnten. Es liegt beinahe etwas Pathetisches in der Bekanntmachung, dass zwei Menschen nach dem fernen Osten gehen sollen, um dort die Handelsverhältnisse auszuforschen, einen Plan auszuarbeiten, um den amerikanischen Handel zu erweitern und nach sechs Monaten, von ihrer Abreise gerechnet, zurückkehren und bereit sein sollen, dem Kongresse einen umfassenden Bericht zu unterbreiten. Zwei Monate werden mit der Hin- und Herreise von dem Felde ihrer Beobachtungen hingehen, ein anderer Monat ist als das Minimum der nöthigen Arbeit für das Zusammenstellen eines Berichtes anzunehmen, somit blieben nur drei Monate in welchem sie die Mittelpunkte des Handels derjenigen Hälfte der Welt besuchen können, welche augenblicklich dem amerikanischen Exporteure als das reichste in kommerziellen Möglichkeiten erscheint.

Die Instruktionen, welche den Agenten zugingen, sind sehr vollständig und es unterliegt keinem Zweifel, dass ihre Arbeit so gut als es sich unter den obwaltenden Umständen eben erwarten lässt, gethan werden wird. Jedoch ist nur zu bedauern, dass die ganze Unternehmung schon beim Ausgange zu mittelmässigen Resultaten verurtheilt zu sein scheint, wenn sie nicht gänzlich misslingt.

Die Kanäle und der Ackerbau

Der amerikanische Konsul, Herr Frank W. Mahin, von Nottingham, England, sagt in seinem Bericht an das Ministerium, dass die hohen lokalen Frachtsätze, der Rückgang in der Landwirthschaft, das allgemeine Stocken des Handels, und andere damit verbundene Ursachen der Unzufriedenheit, mit den herrschenden Verhältnissen, haben in den letzten Monaten die besondere Aufmerksamkeit auf das Kanalsystem gerichtet, welches ein Ganzes von 3,907 Meilen in dem Vereinigten Königreiche ausmacht. Beinahe ein Drittel der ganzen Strecke gehört den Eisenbahngesellschaften, welches den Werth des Systems als ein konkurrenzfähiges Medium des Transportes wesentlich beeinträchtigt. Der letzte Vorschlag ist, dass dieselben dem Staate angehören sollen und dass das Kanalssystem mit Elektrizität versehen werden solle. Den offiziellen Berichten zufolge betragen die Totaleinkünfte der Kanäle ungefähr 12 Millionen und die totalen Auslagen nur achteinhalb Millionen Dollar, was augenscheinlich einen guten Profit übrig lässt. Ein hervorragender Civilingenieur, welcher die Sache mit Aufmerksamkeit studirt hat, schlägt eine Aufnahme von zwanzig Millionen Pfund (beinahe hundert Millionen Dollar) vor, zum Zweck des Ankaufes, der Verbesserung und der Elektrisirung der Kanäle, welche Summe auch ein Reserve Arbeitskapital von ungefähr fünfzehn Millionen Dollar in sich schliesst. Dieser Ingenieur berührt den Gewinn und die verschiedenen Vortheile, welche daran erwachsen würden, und bemerkt, dass die vorgeschlagene Elektrisirung einen billigen Vorrath von elektrischer Kraft den Transport für die Wasserversorgung, Bewässerung für das Pflügen für Buttern, Mahlen, u. s. w.—in kurzen Worten, die Wiederbelebung des inländischen Kanalsystems würde zur Belebung des landwirthschaftlichen Wohlergehens viel beitragen.

Bedarf an Stahl

In Bezug auf die Situation in der Stahl Produktion, bemerkte Herr Charles M. Schwab das Folgende:

"Ich glaube dass ein andauernder starker Bedarf an Stahl vorauszusehen ist, welcher eine grosse Ausfuhr zur Folge haben wird. Spanien hat sich entschieden seine Marine neu zu konstruiren, Russland muss dasselbe thun. Die Vereinigten Staaten, England, Deutschland und fast jede andere Nation lenken ihre Aufmerksamkeit dem Schiffbaue zu, was einen sehr grossen Bedarf an Stahl für die nächsten Jahre zur Folge haben muss. Russlands Programm umfasst eine aktive Konstruktionsperiode welche sich über 15 Jahre erstreckt. Spanien wird ebensoviel benöthigen, so auch die Vereinigten Staaten, England, Frankreich, einige der süd-amerikanischen Staaten, Japan, China und andere, wenn auch in kleinerem, weniger umfangreichem Masstabe.

"Uebereinstimmend mit dieser Periode der Schiffskonstruktion müssen natürlich auch eine grosse Anzahl von Hülfsschiffen angeschafft werden, denn die Marine ist heutzutage eine Maschine welche gezwungen ist Reparatur-, Kranken-, Kohlen-, Transportschiffe und kleine Boote verschiedener Art mit sich zu führen. Alle diese Schiffe sind nothwendig, nicht etwas zum Kriegführen, sondern um den Krieg zu verhindern und für denselben in Bereitschaft zu sein, wenn er wirklich ausbricht. Herr Roosevelt hat Recht und seine Aussichten wurden in den letzten Wochen von dem deutschen Kaiser bestätigt und sollten von allen Marine- und Armeekommandanten angenommen werden."

Herr Schwab ist der Meinung, dass beim nächsten Kongress einige Massregeln zur Sprache kommen werden, welche die Errichtung einer amerikanischen Handelsmarine befürworten sollen. Er glaubt, dass wenn unsere Handelsleute sich auf den Märkten der Welt einen Platz erringen wollen, dann muss auch eine Marine da sein, welche die amerikanische Flagge führt und unserem Lande dasjenige Ansehen in den fremden Häfen verschafft, welches mit dem Schutze der Flagge kommt. Er denkt, dass die amerikanischen Eisenbahnen gerade anfangen die Nothwendigkeit einer gänzlichen Neukonstruktion einzusehen, dass bedeutend stärkere Unterbaue hergestellt werden sollen, dass mehrere Schienenwege, stärkere Betriebskraft und besser konstruirtes Material nothwendig seien.

Er glaubt ferner, dass in diesem Lande weitgehende öffentliche, gesellschaftliche und private Verbesserungen binnen der nächsten Jahrzehnte oder so stattfinden werden, welche mehr und mehr Stahl erfordern dürften. Diese Idee gründet sich theilweise auf die steigenden Kosten des Holzes und auf die Unzerstörbarkeit des Stahles durch Feuer. Stahl wird mehr und mehr in der Konstruktion von Wohnhäusern und Geschäftsgebäuden in den Städten angewendet werden, um die enormen Verluste durch Feuer abzuwenden, welche jetzt den Wohlstand des Volkes verzehren und den Handel sowohl wie auch das Volk belasten.

Das Arbeitsbureau in Washington hat einen Berich zusammengestellt, aus welchem ein merkliches Steigen in den Preisen der Lebensmittel seit dem Jahre 1890 zu ersehen ist. In 1904 war der Engrospreis von Getreideprodukten durchschnittlich um 26.2 Próz. höher als in der Periode von 1890 bis 1899. Von 52 Artikeln, welche in der Nahrungsmittel-Rubrik figuriren, zeigt es sich, dass in 1904 die Preise von allen, ausgenommen 14, höher als die Durchschnittspreise in 1890 bis 1899 waren. Siebzig Artikel mit Kleidungsstucken bezeichnet bezeigen dass der Durchschnittspreis in 1904 9.8 Proz. höher war, als in dem Jahren 1890 bis 1899. Die Tabelle fur Feuerung und Beleuchtung stellt den Durchschnittspreis in 1904 um 30.6 Proz. höher als in dem Zeitraume zwischen 1890 und 1899.

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Die Eisen- und Stahlfabrikation, die ungefähr ein Viertel der Totalausfuhr ausmacht, beläuft sich auf 134.727,921 Dollar, gegen 111,948,586 Dollar im vorhergehenden Jahre. Stahlschienen erfreuten sich einer Zunahme von 6.000,000 Dollar.

Besonders beachtenswerth ist die grosse Zunahme im Versand von Lokomotiven nach Japan: 151 Lokomotiven sind im Jahre 1905 dorthin versandt worden, gegen nur 74 im vorhergehenden Jahre. Auch vergrösserte Japan seinen Einkaufsbedarf an elektrischen Maschinen und Bauutensilien. Kupferfabrikationen nehmen den zweiten Rang ein und zwar durch einen Totalwerth von 86.225,291 Dollar in 1905, verglichen mit 57.142,081 Dollar im Jahre zuvor.

Auch lässt sich eine Zunahme im Versande von Minaralölen—der dritte Artikel von Wichtigkeit—ersehen, und zwar, um über 100 Millionen; doch ungeachtet der Preisherabsetzung, blieb der Werth desselben thatsächlich ein unveränderter. In 1905 war der Oelexport 951.000,000 Gallonen gegen 847.000,000 Gallonen im Jahre zuvor. Sein Werth in 1905 belief sich auf 71.888,317 Dollar und in 1904 auf 71.753.552 Dollar. Nach Grossbritannien und Irland wurden 221.000,000 Gallonen exportirt; nach Deutschland, 147.000,000; nach den Niederlanden, 117.000,000 Gallonen. Nach Süd-Amerika wurden nur 55.000,000 Gallonen versandt.

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Nach China wurden ca. 400 Millionen Yard mehr versandt wie letztes Jahr, als nur 76.9 Millionen dahin versandt wurden. Der Betrag unserer Baumwollenzeuge dahin stieg von 4.000,000 Dollar in 1904 auf 27.750,000 Dollar in 1905. Japan war das einzige Land das einen so kollossalen Zuwachs aufweist, 10.000,000 Yard mehr gegen nur 440.,000 Yard im Jahre 1904.

Leder und hiervon abgeleitete Fabrikations-Erzeugnisse das den vierten Hauptpunkt auf der Liste der ausgeführten Fabrikationsartikel bildet, weist eine Zunahme von 4.000,000 Dollar auf. Japan nimmt auch in dieser Klasse einen grossen Antheil in der Erweiterung des Handels ein.

Die zweite Stadt der Welt

Die genauen Zahlen der letzten Volkszählung deuten daraufhin, dass die Einwohnerzahl der Stadt New York etwas geringer als vier Millionen, also in genauen Ziffern 3.987.154 beträgt. Manhattan und Bronx allein bilden schon vielleicht eine Bevölkerung von gegen 2.378,606 Seelen. Interessant ist ein Vergleichs-Rückblick der New Yorker Bevölkerung seit den verschiedenen Stadien seines Wuchsanfangs bis auf die Gegenwart. Die erste von der Regierung vorgenommene Volkszählung in 1790 erwies dass die Bevölkerung sich auf 33,313 belief. In 1800 stieg dieselbe auf 60,515 und in 1810 betrug sie schon 96,373. Die folgenden zwanzig Jahre weisen eine Verdoppelung auf und in 1830 war sie bereits 202,589. Während der Mitte des Jahrhunderts erreichte sie schon die halbe Millionziffer. Dreissig Jahre später, also in 1880, hatte sie sich wieder mehr als verdoppelt und die Einwohnerzahl belief sich dann auf 1.206,293. In den fünf Jahren, von 1900 bis 1905 ist New York von 3.437,000 bis auf 3.987,154 gewachsen, jährlich also um 100,000 Seelen. Im Vergleich zu anderen grossen Weltstädten steht New York wie folgt da: London als erste voran, mit 4.536,642 Seelen; nach New York kommt Paris mit 2.714,008; Berlin mit 1.888,848 und Chicago mit 1.698,575 Seelen. Dann folgt Wien, Canton, Tokio und Philadelphia von denen jede über eine Millionen Einwohner hat. Nach der in 1900 stattgefundenen Volkszählung hat Philadelphia 1.293,697 Einwohner.

Was die Möglichkeit anbetrifft, dass New York die allergrösste Stadt der Welt werden dürfte, scheint soweit kein Zeichen vorhanden zu sein, dass London während der nächsten Jahrzehnte vom ersten Platz zurücktreten werde, denn die Metropolis London einschliesslich aller Polizeidistrikte zählt heute 6.581,372 Seelen was in Wirklichkeit die Totaleinwohnerzahl vom sogen. Gross London bildet. In anderen Worten: das "Manhattan" Londons zählt 4.613,812 Seelen gegen New York's "Manhattan" das nur eine Einwohnerschaft von 2.127,602 hat und während Gross London eine Totaleinwohnerzahl von 6.581,327 zählt ist die Bevölkerung New York's heute kaum 4.000,000 gross. Die Rate des Wachsthums jedoch ist eine grössere in New York als in London. Hält die augenblickliche Rate des Wachsthums dauernd an, dann, allerdings, dürfte es blos eine Frage der Zeit sein, ehe die grösste Stadt der Welt in der westlichen Hemisphäre zu finden sein wird.

Amerikanisches Geld im Auslande

Es wird von Sachverständigen an den ausländischen Wechselstellen behauptet, dass in den letzten fünf Jahren im Auslande durchschnittlich mehr als hundert Millionen Dollar das Jahr von amerikanischen Touristen ausgegeben wurde. Nicht weniger als 150,000 Reisende, sagt man, werden dieses Jahr über den atlantischen Ocean nach dem Osten ziehen und die Ausgaben dieser amerikanischen Wanderer werden sich wenigstens auf tausend Dollar pro Person belaufen—oder im Ganzen auf ca. 150.000,000 Dollar.

Ungefähr der vierte Theil des Feriengeldes der Tonsisten wird für Schiffsbillette ausbezahlt werden und von dieser Summe wird wieder ein Theil auf verschiedener Weise seinen Weg in die amerikanischen Koffer zurückfinden. Durchschnittlich verausgabt der amerikanische Tourist—so behaupten wenigstens die Sachverständigen—dreimal so viel als ihm das Rundreisebillet über den Ocean kostet. Dies würde eine Durchschnittsausgabe drüben für diese Armee von Reisenden von 750 Dollar pro Person ausmachen oder im Ganzen 112 Millionen Dollar, die in fremden Landen vertheilt werden. Die Summe ist beinahe genug um die Pensionslisten der Vereinigten Staaten für ein Jahr zu bestreiten. Es ist, ohne Zweifel zu bedauern, dass viele von denen welche jedes Jahr nach Europa reisen ihr Geld nich dazu verwenden um Etwas von ihrem eigenen Lande und dessen Bewohnern und Reichthümern kennen zu lernen von denen doch so viel ausserhalb der Distrikte sich befinden welche sie zufällig ihre Heimath nennen.

Es wird gebeten, sich bei eventueller Beantwortung in diesem Blatte enthaltener Anzeigen auf diese Zeitschrift beziehen zu wollen.

HOW A GAS ENGINE TALKS

To the experienced man the gas engine has a language of its own which the man who runs it must at all times understand, says *Gas Power*. If he cannot do this then his experiences with the engine are going to be varied, but they won't be pleasant. When the engine is right and is, in consequence of being so, doing what is right, the only sound it emits are such as are made up from the clicking of the valves, the inhalation of the air and the exhaust. When the usual sounds are well understood, any unusual ones will be promptly noticed and their cause located and removed. The trained ear is probably a better trouble detector than the eye. The best way to become acquainted with the natural sounds is to first operate or run the engine for a time, say from half to an hour, free; without a load.

It will be noticed that under no load, besides driving itself, if it is a hit-and-miss governor engine, it will produce an inhalation sound followed immediately by a loud chaust report. If the governor is the least bit off or sluggish a second or third of this pair of sounds may follow in quick succession. But usually the first is followed by an intermission, which is made up of a series of suction sounds at the end of the exhaust pipe, if the governor serves to hold up the exhaust valve when no impulse is needed. These suction or blowing sounds are due to the inhalation and expulsion of the air through the exhaust pipe, at each movement of the piston, so long as the governor holds up the exhaust valve. The moment this valve is released a loud suction or inhalation sound is again heard at the mouth of the receiving pipe, followed immediately by the loud report at the end of the exhaust pipe, which pair of sounds is the result of taking into and igniting the charge within the cylinder and exhausting the burnt gases under the pressure that remains in the cylinder at the time the exhaust valve opens.

Now, if the inhalation sound at the receiving pipe is heard and the loud exhaust report does not follow, the operator knows at once that the charge taken during the inhalation was not ignited or exploded. He knows there is a natural sound missing which signifies an abnormal condition. He reasons, if the charge isn't exploded, why not? Did the gasoline fail to get into the air current in sufficient quantity to make the proper mixture? or did it over charge the air? or was the mixture right and did the battery fail to make a spark? or if proper mixture and spark were both present, is there a leak of sufficient gravity through the valve or around the piston, by the packing rings, to allow practically all of the charge to escape before the spark is made?

The absence of a natural sound production will often point out an abnormal condition as readily as the presence of an unnatural one will. A careful operator notices all of these things. None of them escapes his ears so long as he is within hearing distance of his engine. To him the absence of one natural sound is the letter that misspells the two words, successful operation, consequently the importance of being able to detect the absence of the natural sounds. To know them is the only sure way to notice their absence.

The frequency of the exhaust reports increase as the engine is put under a load. And the heavier the load the more frequent the reports, until a full load is reached. A trained operator can be away across the country and within hearing distance of his engine, or rather the exhause reports of it, and be able to say that the engine is running well and easily carrying its load, or that there is something wrong with it.

Now, one of the common expressions of discontent the engine makes is pounding in the cylinder; and this usually occurs when the engine is under a heavy load. The interior of the cylinder gets so hot that some burnt carbon aor pr ojecting point of iron becomes heated to the igniting point. This in connection with the heat generated by the compression pressure ignites the charge before the piston has completed its compression stroke. The result is a sudden conflict between the explosive and compression forces. This sudden collision of forces causes a heavy pound in the cylinder. A loose flywheel causes a thump, usually at every impulse the engine takes. Looseness at the wrist box causes a knock. A loose crosshead box usually causes a clatter. A knock once located around the connecting rod may be due to either the crosshead or wrist boxes being adjusted too tightly. One may be so tight as to lift and depress the other end at each revolution. Often a knock or clatter at the crosshead or wrist bearing may be cured by simply loosening up the bearing or box at the other end of the connecting rod from that where the knock is located.

A flywheel loose on the shaft sometimes makes a rubbing sound, caused by some part of the circumference of the rim of the wheel rubbing at each revolution against some object near the engine. There is a barking or coughing noise at times from the cylinder, due to escape of the explosive force past the piston rings. This seldom occurs unless rings are badly worn or poorly fitted to the piston. Sometimes gummy oil will cause rings to stick in their grooves. A blowing noise just in advance of the exhaust report at the mouth of the exhaust pipe indicates a leak at the exhaust valve.

THE CLIFF HOUSE. ENTRANCE TO THE GOLDEN GATE, SAN FRANCISCO

GASOLINE DRIVEN BOATS

For work on shallow water and against a swift current, flat bottom stern-wheel boats, propelled by gasoline engines, are found to be swift and serviceable. The illustration shows three of these boats which ply between the shrimp fishing ground at Grand Isle, La. and the cannery of a New Orleans firm.

The boats are of 16 gross tons each, 60 feet long, 15 feet beam and 3½ feet depth or hold. Each is equipped with a 30-hp., 3-cylinder vertical type special marine engine. The engines are set fore and aft and drive the stern wheel through a worm gear and sprocket wheels and chain. They make 9 miles an hour, upstream, against a 4 mile current in the Mississippi river, a good speed for a boat of this kind. We are indebted to *Popular Mechanics*, Chicago, Ill., for this interesting illustration and description.

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INTENTIONAL SECOND EXPOSURE

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The absence of a natural sound production will often point out an abnormal condition as readily as the presence of an unnatural one will. A careful operator notices all of these things. None of them escapes his ears so long as he is within hearing distance of his engine. To him the absence of one natural sound is the letter that misspells the two words, successful operation, consequently the importance of being able to detect the absence of the natural sounds. To know them is the only sure way to notice their absence.

The frequency of the exhaust reports increase as the engine is put under a load. And the heavier the load the more frequent the reports, until a full load is reached. A trained operator can be away across the country and within hearing distance of his engine, or rather the exhause reports of it, and be able to say that the engine is running well and easily carrying its load, or that there is something wrong with it.

Now, one of the common expressions of discontent the engine makes is pounding in the cylinder; and this usually occurs when the engine is under a heavy load. The interior of the cylinder gets so hot that some burnt carbon aor pr ojecting point of iron becomes heated to the igniting point. This in connection with the heat generated by the compression pressure ignites the charge before the piston has completed its compression stroke. The result is a sudden conflict between the explosive and compression forces. This sudden collision of forces causes a heavy pound in the cylinder. A loose flywheel causes a thump, usually at every impulse the engine takes. Looseness at the wrist box causes a knock. A loose crosshead box usually causes a clatter. A knock once located around the connecting rod may be due to either the crosshead or wrist boxes being adjusted too tightly. One may be so tight as to lift and depress the other end at each revolution. Often a knock or clatter at the crosshead or wrist-bearing may be cured by simply loosening up the bearing or box at the other end of the connecting rod from that where the knock is located.

A flywheel loose on the shaft sometimes makes a rubbing sound, caused by some part of the circumference of the rim of the wheel rubbing at each revolution against some object near the engine. There is a barking or coughing noise at times from the cylinder, due to escape of the explosive force past the piston rings. This seldom occurs unless rings are badly worn or poorly fitted to the piston. Sometimes gummy oil will cause rings to stick in their grooves. A blowing noise just in advance of the exhaust report at the mouth of the exhaust pipe indicates a leak at the exhaust valve.

THE CLIFF HOUSE. ENTRANCE TO THE GOLDEN GATE, SAN FRANCISCO

GASOLINE DRIVEN BOATS

For work on shallow water and against a swift current, flat-bottom stern-wheel boats, propelled by gasoline engines, are found to be swift and serviceable. The illustration shows three of these boats which ply between the shrimp fishing ground at Grand Isle, La., and the cannery of a New Orleans firm.

The boats are of 16 gross tons each, 60 feet long, 15 feet beam and 3½ feet depth or hold. Each is equipped with a 30-hp., 3-cylinder vertical type special marine engine. The engines are set fore and aft and drive the stern wheel through a worm gear and sprocket wheels and chain. They make 9 miles an hour, upstream, against a 4-mile current in the Mississippi river, a good speed for a boat of this kind. We are indebted to *Popular Mechanics*, Chicago, Ill., for this interesting illustration and description.

CHANGES IN TRADE ROUTES

One of the most interesting as it is one of the most momentous facts in the history of commerce, is the shifting of trade routes from one to another.

All the commerce between Europe and Asia was once carried overland by caravans. It was this trade which made the ancient cities of Babylon, Nineveh and Damascus rich and powerful. They became great and famous, not because they were the residences of kings and emperors, but they were chosen to be the capitals of nations because they were great centers of population which was attracted and supported by the vast trade and important industries assembled there. Babylon and Damascus traded with India, Persia and China on the east, and with the European countries on the west, and then they became celebrated in history as well as in commerce.

EARLY MORNING SCENE ON ONE OF THE CANALS OF HAMBURG, GERMANY

After the conquest of Asia Minor and a large part of India by Alexander the Great, ships were sent down the River Euphrates to the Persian Gulf and the Red Sea by way of Egypt, and thus Alexandria became a great commercial city, and the caravan routes were abandoned, and the cities of the Euphrates Valley went to decay. Important commercial ports grew up all around the Mediterranean, and they continued to be of varying fortunes until the discovery of America in 1492, and the opening of the sea route around the continent of Africa by Vasco da Gama in 1497, when trade routes were so radically changed that the Mediterranean ports steadily declined in importance while those of the Atlantic coast on both hemispheres grew at their expense.

The history of the world's commerce from the earliest to the present time is not only of extreme interest, but it sheds floods of light on the rise, culmination, decline and fall of nations. Commerce meant money power, and that meant all that was required to make prosperity and to insure national permanence as far as such permanence can exist.

It must not be supposed that all the changes possible have taken place and no more can occur. The laws of trade are inexorable and imperative and will continue to work their will in the future as they have done in the past. In this connection some figures in a bulletin recently issued from the Department of Agriculture is of interest, showing as it does that there are already changes going on in the routes of the transportation of grain from the United States.

These figures show that for the past two decades there had been a remarkable diversion of grain and cotton for export from the Atlantic States to those on the Gulf of Mexico. For instance, the Gulf ports sent out 44 per cent of the cotton during 1884-88, and 60 per cent in 1905, while the Atlantic States exported 55 per cent of the cotton in 1884-88 and only 34 per cent in 1905.

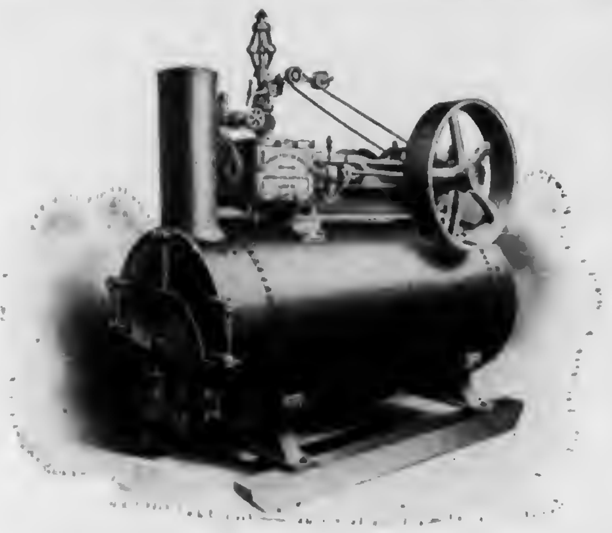
In the wheat trade the exports of the Atlantic cities declined from 50 per cent in 1884-88, to 20 per cent in 1904, while the Gulf ports increased their exports in the same time from 2 per cent to 55 per cent.

The reason for these changes is twofold. In the first place the great sources of production are moving into regions tributary to the Gulf ports, and in the next the facilities for reaching those ports are rapidly increasing. For example, in 1904 nearly one-fourth of the cotton crop of the United States was produced in Texas, and more than one-half in Texas, Mississippi and Georgia. Much of the cotton raised in Mississippi reaches New Orleans and Memphis, and some goes to Mobile and Savannah. The leading primary market for Georgia cotton is Savannah, while Galveston receives, in addition to a large share of the Texas crop, considerable quantities from the Indian Territory and Oklahoma. More than 5,000,00 bales were shipped to Galveston, New Orleans and Savannah during the crop year ending Aug. 31, 1904, and these three cities exported during the corresponding fiscal year nearly three-fourths of the total exports of cotton from the United States.

Most of the surplus wheat of the United States is produced in the country lying west of the Mississippi River north of Oklahoma, and east of the Rocky Mountains. Owing to the great quantity of flour manufactured in Minneapolis, the receipts of wheat at that city are larger than those of any other in the United States. In 1904 they amounted to 87,000,000 bushels. In the same year the receipts of wheat at Kansas City were 39,000,000 bushels; at Duluth, 27,000,000; at Buffalo, 26,000,000; and at Chicago, 24,000,000.

The greater part of the corn crop of the United States is produced in the Mississippi Valley south of the lower limits of the Great Lakes and the southern boundaries of Minnesota and South Dakota, and north of the Ohio River and the northern boundaries of Arkansas and Oklahoma. The production of this region, together with the crop of Texas, amounted in 1904 to 1,574,000,000 bushels.

Cincinnati was once known as "Porkopolis" because it was the center of the slaughtering and packing of hogs for commercial purposes. Now, although Chicago holds that position, the hog industries are rapidly moving west of the Mississippi River. The conditions of food supply and location of the chief deposits of iron and coal in the Mississippi Valley insure the assembling there of a vast population and its various industries. That this will make enormous changes in the trade routes from the heart of this great country can not be doubted. The laws which have operated to control trade routes in the past are still at work and will continue to operate as in the past.—N. O. Picayune.



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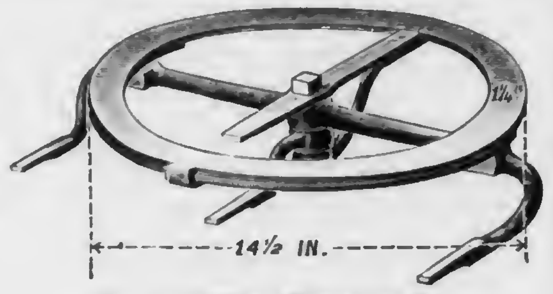

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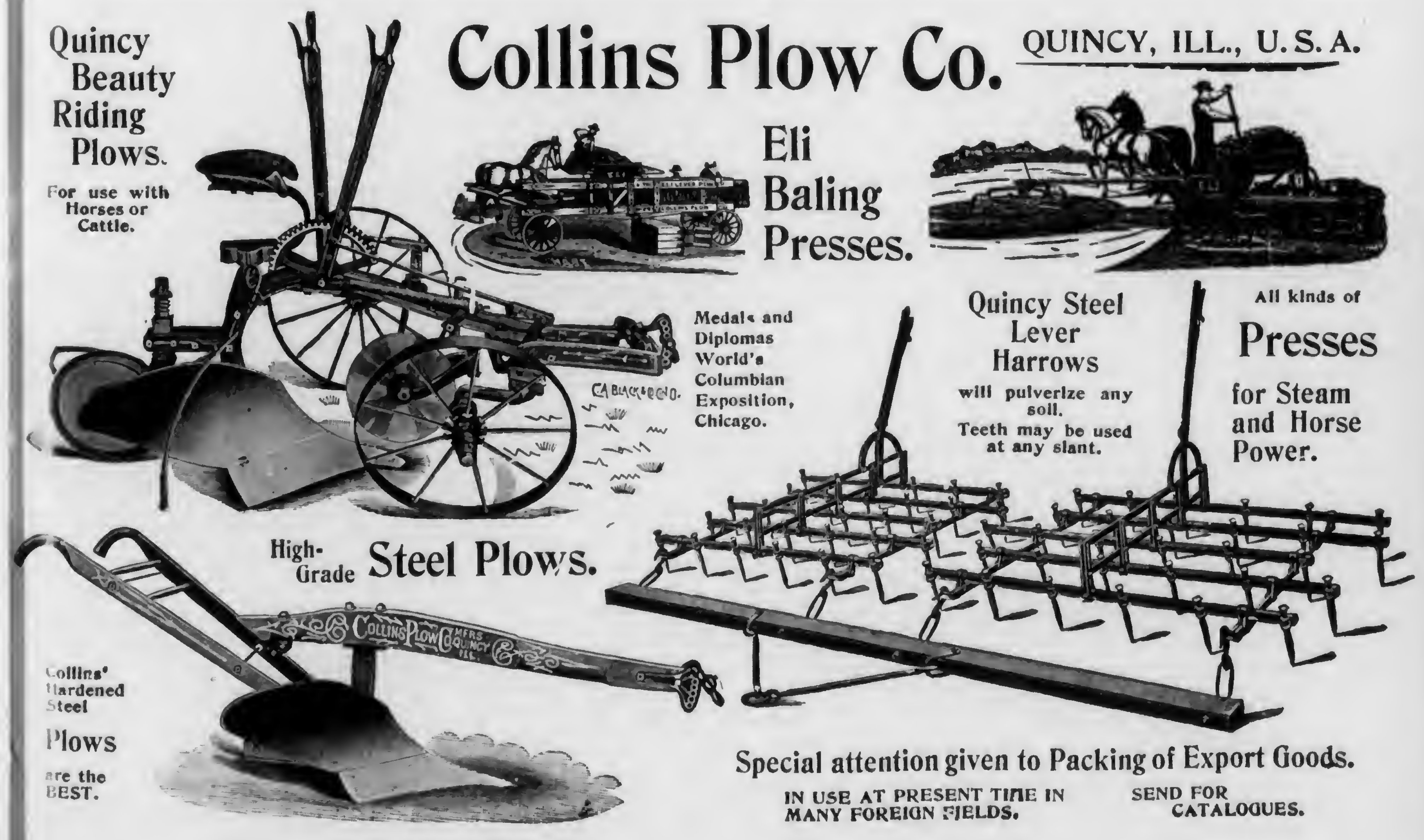
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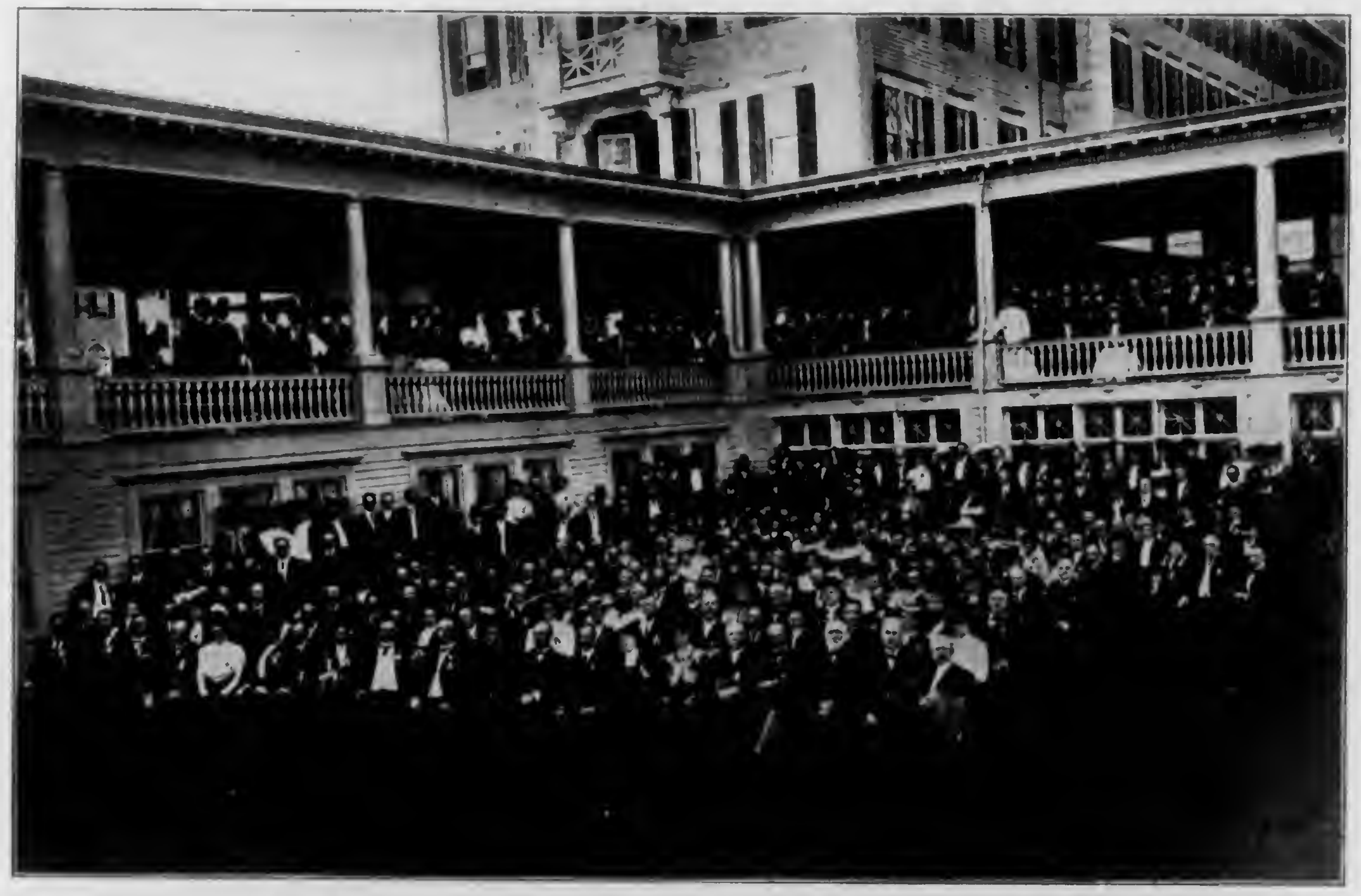
IMPORTS AND EXPORTS OF RICE

The Unted States has entered the list of the world's rice-producing and exporting countries. Figures compiled by the Department of Commerce and Labor through its Bureau of Statistics show that the exports of rice to Cuba alone in the fiscal year 1905 amounted to 34,976,414 pounds, against 698,983 pounds in the preceding year, the value of rice exported to Cuba being $993, 819 in 1905, against $19,985 in 1904. The total value of rice of domestic production shipped out of the country in the fiscal year 1905, including that to the noncontiguous territory of the United States, was $5,361,641, against $667, 387 in 1900 and $16,454 in 1895. Meantime the imports of rice have fallen from practically 4 million dollars in 1899 to two milions in 1905, and for the first time in the history of our commerce the rice exports exceed in value the rice imports. Prior to 1899 the rice imports ranged between three and four million dollars per annum, and the exports had never reached as much as $100,000 in value. In 1900, as already indicated, the exports exceeded half a million dollars, in 1901 they were about one and a half million, in 1902 they exceeded two millions, in 1903 they were two and a half millions, in value, in 1904 two and three-quarters million, and in 1905, as already indicated, $5,361,641, including in these figures the shipments to the noncontiguous territory of the United States.

This remarkable change in the movements into and out of the United States is due in part to the large increase in production which has recently developed in Louisiana and Texas and in part to the new relations of the United States with certain rice-consuming communities especially those of Porto Rico, Hawaii, and Cuba, the two former through annexation and the latter through the reciprocity treaty. Formerly rice was grown only in the coast counties of the Carolinas and Georgia and the Mississippi delta, but a few years ago it was discovered through experiments made by the Department of Agriculture that certain prairie lands in southern Louisiana and Texas, which had been formerly considered fit only for grazing, were peculiarly adapted to rice colture. These prairies are comparatively level, with a slight slope toward the Gulf, and have a number of navigable rivers and numerous lakes and bayous from which irrigation, so necessary for rice culture, can be developed and conducted at comparatively small expense. The prairies are from 20 to 70 feet above the surface of the streams and bayous, and intersected by numerous ridges slightly higher than the rest of the land. On these ridges canals are built on the surface level by throwing up parallel levees, while pumping plants at the heads of the canals lift the water from the stream or lake into these canals, from which it is carried by gravity to the areas in which it is required for irrigation.

In addition to this, the prairies in question are underlain at a depth of from 100 to 400 feet by a water-bearing gravel, from which a water supply is readily obtained by artesian wells. The discovery, through the joint work of the Department of Agriculture and the Geological Survey, that this area was especially available for rice production resulted in a large movement of population from the States of the Middle West to this rice-producing section, and, as a consequence, the production of rice in the United States has grown from less than 100 million pounds in 1880 and 137 millions in 1890 to nearly one billion pounds in 1904, and the United States now takes rank among the rice-producing countries of the world. To be sure, it is not to be expected that the United States will ever compare with the great rice-producing countries of the Orient, where this article is the chief food supply, labor plentiful, and climate especially suited to its production, yet in point of quantity available for distribution to the world's markets the United States apparently ranks fourth in the list of rice-producing countries of the world, the figures of exports in the latest available years being: India, 5,533,000,000 pounds; Siam, 1,893, 000,000 pounds; French Indo-China, 1,514,000,000 pounds; the United States, 204,854,679 pounds, including shipments to its noncontiguous territory; Japan, 103,000,000 pounds; Dutch East Indies, 85,000,000 pounds; Italy, 82,000,000 pounds; Korea, 42,000,000 pounds; and Spain, 30,000,000 pounds.

The list of rice-importing countries of the world is much larger than that of rice-exporting countries. Japan, which is usually looked upon as so great a rice producer as to give a large surplus for exportation, in fact imports much more than she exports, and to such an extent is this true that she was in 1904 the largest rice-importing country of the world, her total imports of rice in that year being 1,964 million pounds, against 1,022 million pounds imported by the Straits Settlements (largely for reexportation), 646 millions by the United Kingdom, 602 millions by Germany, 586 millions by the Philippine Islands, 523 millions by the Netherlands, and 466 millions by France. The rice exports of the principal exporting countries of the world amount in the latest available years to about 10 billion pounds, valued at over 100 million dollars, of which more than one-half was from India and over one-fourth from Siam and French Indo-China.



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CHICAGO'S WONDERFUL GROWTH

The value of Chicago manufactures in 1895 was $788,400,000. This year it is $1,570,800,000. This year the volume of wholesale trade is $2,137,200,000. Ten years ago it was $1,168,600,000. The manifold advantages of the city for purposes of production and distribution are beginning to tell. It is on the great lakes and it is the most important railroad center in the country. The trasportation rates on the raw materials brought here and the finished products taken away generally are reasonable.

The railroads have helped to build up Chicago. They have given favorable rates and that has concentrated business here as it has done in other large cities. But the roads gave those rates not for the purpose of building up Chicago but to get the trade of the city. They came here because it was to their interest to do so. This is a terminal every important railroad system desires to reach.

The Chicago steel manufacturers have cheap ore and coal. They have unrivaled facilities for the distribution of their products by land and water. It is to be expected that the wholesale iron and steel trade of the city should excel all others. It leads in the manufacture of steel rails, and there has been great development in every other branch of the steel industry. The output of the structural steel is increasing. The smaller articles into which that metal is converted are being made here on a more extensive scale. In the near future steel tools, implements, and machinery of all kinds bearing the trade mark of a Chicago house will be found all over the world.

The steel industry in not the only one that is expanding. The growth of the mail order business is remarkable. People can hardly appreciate it. One house which recently bought in a single purchase $200,000 worth of postage stamps has built a new plant which has half a mile of frontage. Those houses grow up here because this is the best distributing point. They bring to Chicago people as well as trade. The men who send mail orders come in person sooner or later.

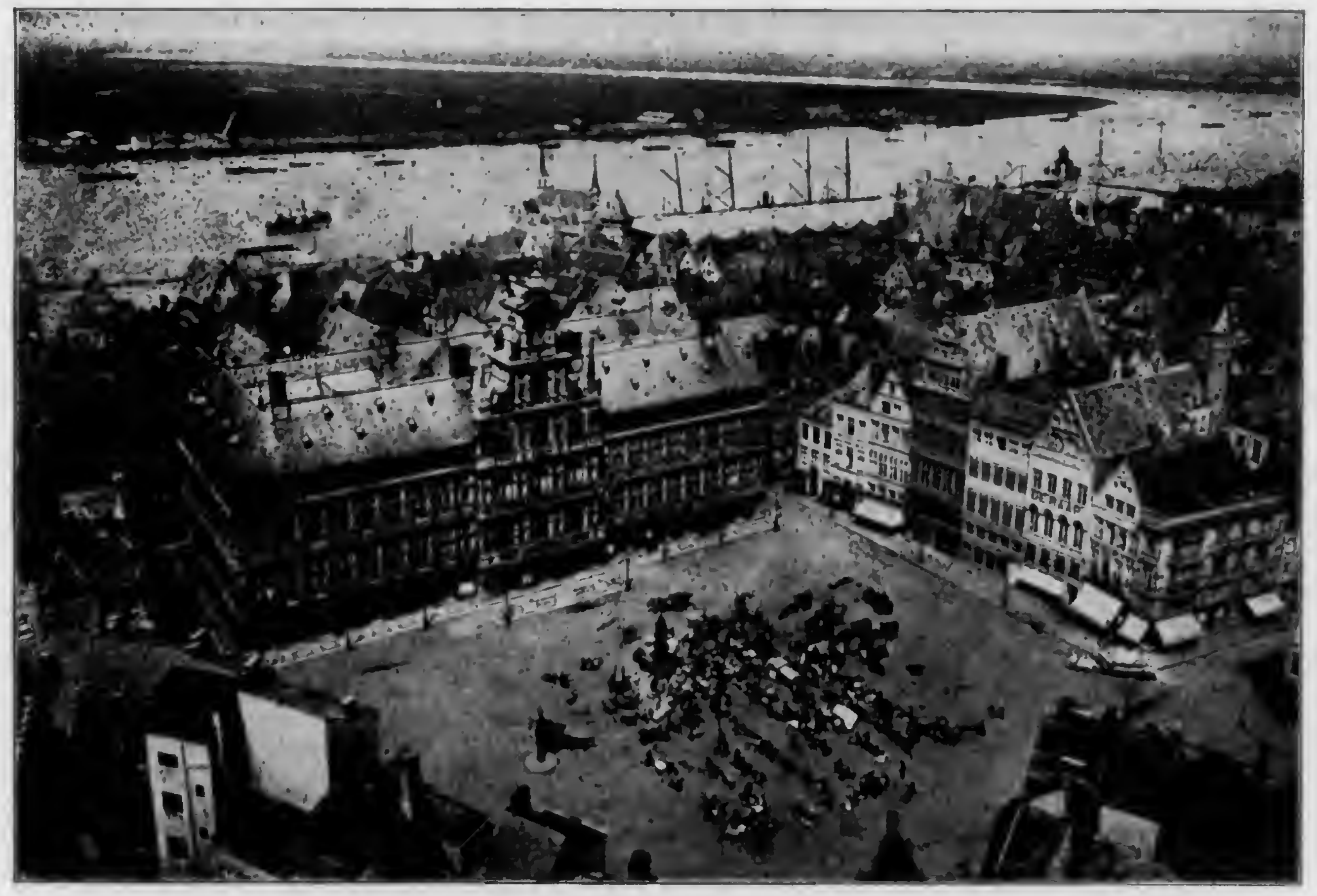
It is said that the Pullman company has taken orders for new cars which will keep its plants busy until the end of 1906. Other Chicago manufacturers are finding it difficult to keep up with their orders. They are all busy, and many of them are contemplating enlarging their plants. The gain of 12½ per cent in the clearings of the local banks last month as compared with October, 1904, is an index to the growth in the city's trade.

Such growth in manufactures as has taken place in Chicago involves a considerable increase in population. That it is growing rapidly is self-evident. The crowds on the streets show it. So do the cars on the surface, elevated, and suburban roads. The theatres are full, and more are needed. The managers acknowledge that Chicago is the best town in the country for their business. The hotels are crowded, and many are turned away every night from the leading ones.

More dwelling houses and stores are needed for the accommodation of the growing population. They are being erected in great numbers in the outskirts, and even beyond the city limits where the street cars or steam railroads extend and provide means of transportation. No sooner are the new buildings erected than they are occupied.

The demand for land for building purposes has stiffened the real estate market. It has been sluggish—except in the downtown district—since the world's fair. The universal testimony is that there will be a remarkable advance in value of both inside, outside, and intermediate property. The extension of the trolley lines and the rapid transit they afforded brought large outlying areas much nearer the city in point of time. They became available for residence purposes, and the value of much intermediate property was lowered. It is now beginning to go up. Chicago realty, which has been in a poor way since 1893, is responding to the growth of trade and manufactures.

During the last decade the increase in Chicago manufactures was 100 per cent and in wholesale trade 100 per cent. There should be a larger growth during the next decade as the advantages the city holds out to merchants and manufacturers become more widely known.



THE GREAT CITY HALL, ANTWERP, BELGIUM

EXPORTS OF FOREST PRODUCTS

One-half of the domestic exports of forest products in 1904 was consigned to the United Kingdom, Germany, and Canada, while the other half was distributed among 75 other countries. This trade is then not quite so concentrated as the trade in farm products, since nearly one-half of the domestic exports of farm products was consigned to only one country. A market increase in 1904 over 1903 is shown in the forest-product exports to two countries of the Southern Hemisphere: Argentina increased from $1,800,000 to $3,200,000 and British Australasia from $1,600,000 to $3,100,000. The increase in domestic exports of forest products to Germany in 1904 over 1903 was $2,500,000.

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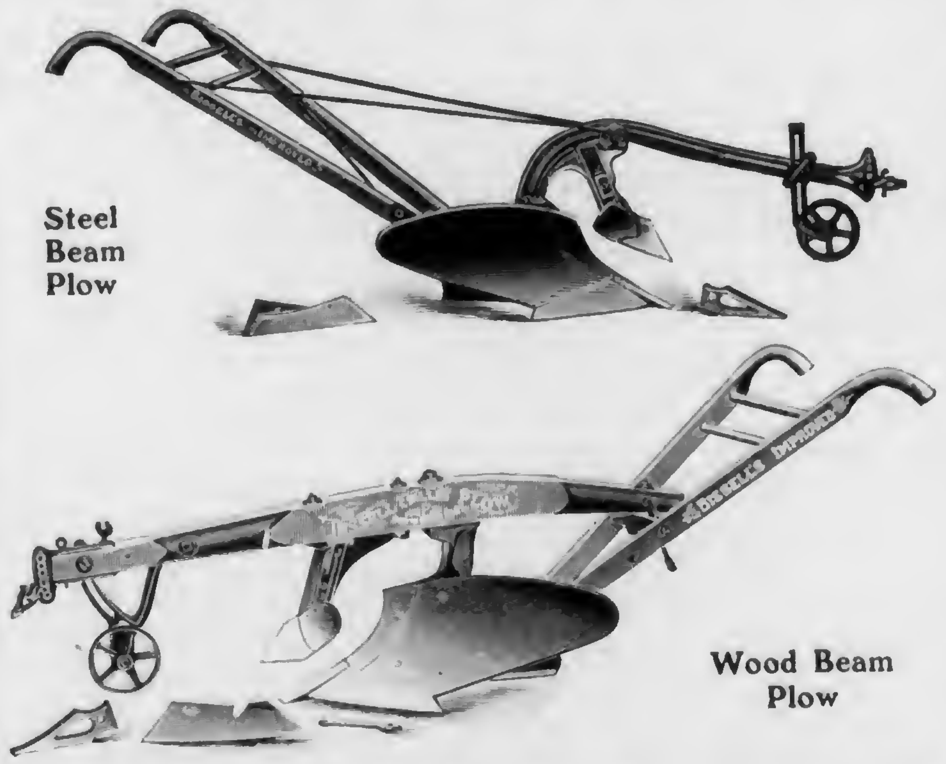

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OUR IMPLEMENT EXPORTS

Since the year 1899, when our exports for the first time surpassed those of Great Britain in this line, the United States has been without interruption the largest exporter of agricultural implements and machinery in the world. Even in the trade, however, many fail to realize how important a part exports play in the successful conduct of this branch of manufacture, or how essential an export outlet is coming to be to the prosperity of the industry as a whole. In the census year 1900 the total number of establishments engaged in the manufacture of farm implements was returned as 715, employing 46,582 hands and 10,046 clerks and salaried officials. The annual value of the product was put at $101,207,428, as against $81,271,651 10 years earlier, $68,640,486 in 1880, $52,066,875 in 1870, $20,831,904 in 1860 and $6,842,611 in 1850.

Rapid, however, as this growth has been it is important to note that the rate of increase of our exports in this line has been far more rapid, indicating that as the limits of the capacity of the home market have been reached, our manufacturers have pushed outward into foreign fields with increasing energy and success. In 1850-1860 exports of farm implements were not classified separately, a fact that in itself indicates that the foreign trade in this line was then too small to be worthy of much attention. In 1870 the exports of farm implements were reported at $1,068,476, or a little over 2 per cent. In 1880 they had increased to $2,245,742, or 3.27 per cent. By 1890 the exports had still further advanced to $3,859,184, or 4.74 per cent. These slow gains in percentage, however, indicate that during all these decades our manufacturers were able to do little more than keep up with the home market.

Since 1900 the figures tell a very different story. In the year 1900 itself exports amounted to $16,099,149 or 15.9 per cent. The next two years exports remained stationary at about the same figure, and it is probable that the same percentage would also hold true, since there was no very great increase in output during that period. In 1903 exports jumped to $21,006,622, and following year to the record total of $22,749,635. For the year ending last June the total fell off slightly to $20,721,741. The average for the three years may, however, fairly be considered to be about 20 per cent of the output and that proportion is therefore the measure of the importance of the export outlet to our farm implement manufacturers. Any manufacturer knows what the loss one-fifth of his outlet would naturally mean to him. Taking the industry as a whole foreign markets consume now one-fifth of our production of farm implements. So large a proportion is of vital importance and hence it is that our able manufacturers of farm implements are in the forefront of the struggle to protect the foothold we have gained in foreign markets and are rigidly opposed to those who seek to strangle our foreign trade by exposing the nation to avoidable tariff controversies.

Fortunately, the foreign market for our farm implements, unlike that for our cottons, is a fairly broad one. One of the most striking features of the export returns, taking them for a long series of years, is the manner in which one new outlet has been developed to take the place of another whenever, for any reason, trade in some promising section declined. Thus one year Russia has been our best customer, another Canada, and another Argentina. Great Britain, France, Germany, and Australia are also markets that as a rule call for more than $1,000,000 worth of our agricultural implements annually. Mexico is a good and a remarkably steady customer, taking between $300,000 and $400,000 each year. Cuba is a promising market under reciprocity, having increased her purchases from $55,756 in 1903 to $208,908 in the fiscal year 1905.

BRITISH AFRICA STOCKED UP.

Chile for the last two years has taken $250,000 annually. Brazil, for many years a poor market, has trebled her purchases over last year, taking $151,715 as against $51,757. The rest of South America, Central America and the West Indies are as a whole poor markets. British Africa was a heavy buyer right after the war, taking over $1,000,000 worth in 1903, but is now stocked up and took only $423,072 last year as against $673,737 in 1904. Australasia fell off sharply during the last fiscal year, taking $1,159,933 as compared with $1,555,085 the year before. Argentina, on the other hand, made a record, taking $5,032,853 as against $3,996,476 last year and $2,821,257 in 1903. The new tariff regulation against free importation of parts, which has undoubtedly been much abused, may cut down our trade somewhat, while in any event the heavy purchases the past year will mean full stocks and light buying for some time to come.

Canada, which took American implements to the value of $4,023,857 in 1903, fell off to $3,362,113 last year and $1,898,915 this year. To some extent this sharp decrease may be attributed to the erection of American implement factories across the border. Europe, for various reasons has been a light buyer the past year. Great Britain, one of our steadiest customers, bought only $1,068,381 as against $1,921,179 in 1904; exports to France declined from $3,063,752 to $2,817,998; exports to Germany from $1,579,026 to $1,246,101. Exports to Russia, on the other hand, increased from $3,342,130 to $3,812,705; but exports to "other Europe" fell off from $4,559,601 in 1903 to $3,362,113 last year and to $1,898,915 in the fiscal year ending June 30, 1905. These declines, however, are not apparently due to hostility to American goods, or to increased competition, so much as to ample stocks and general quietness in the demand.

A moderate revival is looked for during the coming year, especially in Great Britain and France, while our alert and energetic manufacturers may be depended upon to push their goods all the harder in neutral markets to the end that the outlet so essential for one-fifth of their product may be sufficiently large to absorb the desired amount.—N. Y. Commercial.

STATISTICS OF FOREST PRODUCTS

The annual value of the forest products of the United States, as enumerated in the twelfth census, is nearly $575,000,000. If to this were added the value of the firewood, farm material and other forest products for which no returns are available, a very much larger figure would be shown. Thus, as a direct source of wealth the forests of the country rank nearly with the mineral products as second to the farms. In addition to monetary value, the forests of the country have an immense, though not exactly calculable, value as a source of future supply and as a protective covering for watersheds. Forest products are indispensable to mankind, and their steadily increasing price surely indicates that the demand is encroaching upon the supply. It is urgently important to the nation that the yearly consumption of the forest products and the amount of available timber yet standing should be known.

In acordance with its policy of encouraging the preservation and proper use of the forest, the forest service is aiming to secure statistics for publication in a report in the hope that cooperation with the industries concerned will make possible an annual report entitled "Forest Products of the United States." This proposed report would give, by States, regions, and species, the cut and shipments of lumber, shingles, lath, cooperage stock, ties, posts, and poles during the year; the stock on hand at the close of the year; and also the amount of wood used in the various industries for which wood furnishes the raw material, and the value of the products. It would also give information concerning the amount of stumpage in the hands of lumbermen in various regions, how long it will last at the present rate of cutting, the extent of damage by forest fires, and other important matters relating to the forests of the country.

The decline of $19,000,000 in American exports of farm products from 1903 to 1904 was due chiefly to losses in the trade with Africa and Oceania, while, of the increase of $12,000,000 in domestic exports of forest products, $5,000,000 was due to Europe, $3,000,000 to North America, $2,000,000 to South America, and $2,000,000 to Oceania, Africa, and Asia. It is seen also that Oceania dropped from fifth to sixth rank in value of farm-product exports in 1904, and rose from fifth to fourth place in the exports of the forest products for the same year.

Africa, which ranked third as a destination of America farm products in 1903, declined to the fourth place in 1904, owing to the recovery of South Africa from the Boer war; and in forest products this grand division changed from fourth to fifth place in 1904.

Swiss steamboat companies, to avoid disputes as to the age of children, have established measurement rules. Under two feet in height go free; children under four feet four inches and dogs pay half fare.

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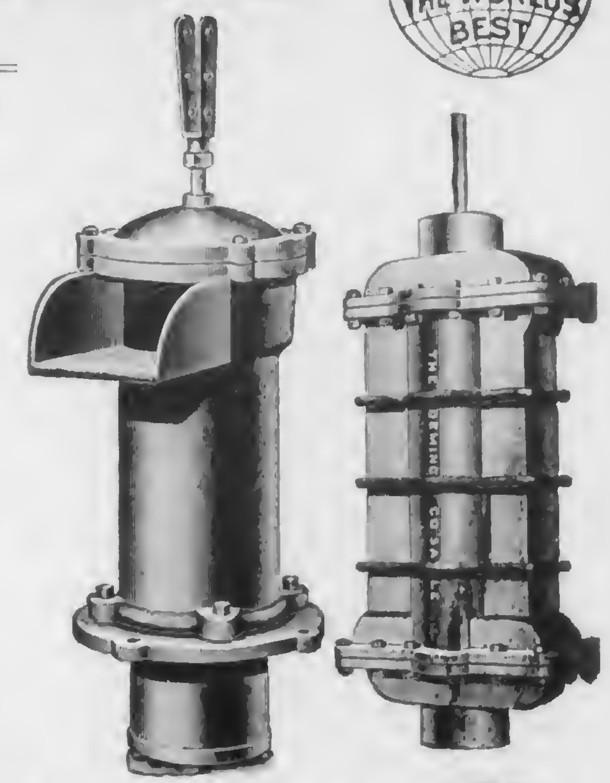
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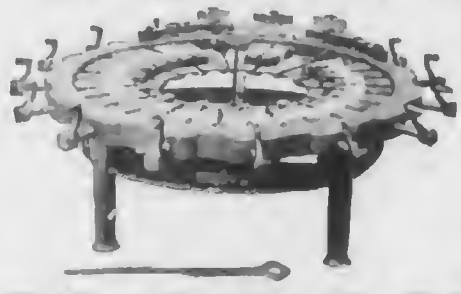

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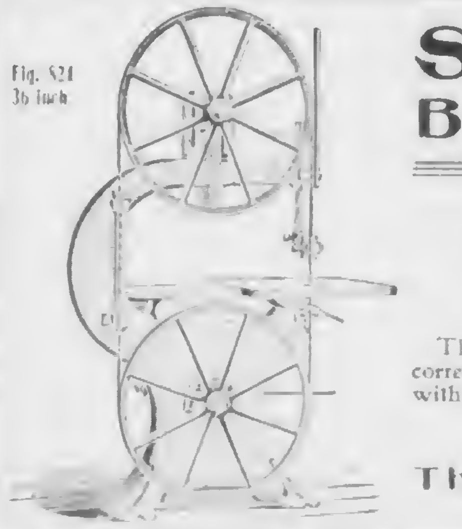

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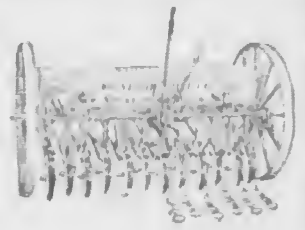

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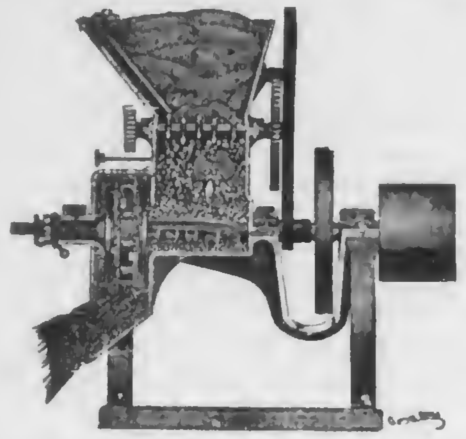

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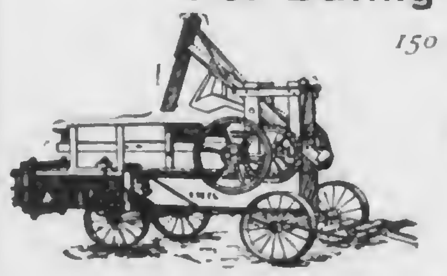

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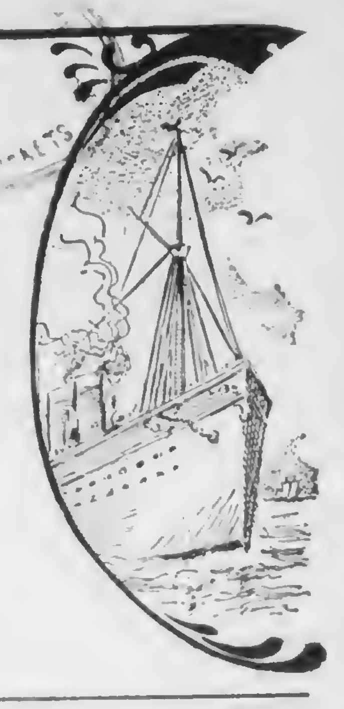

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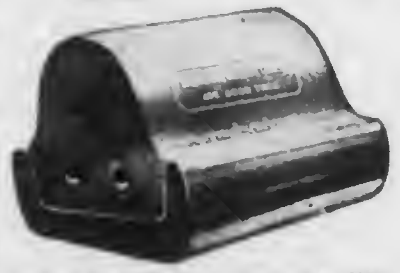

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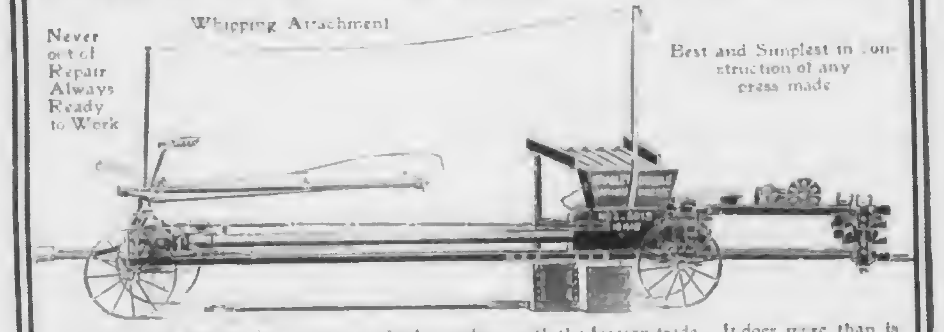

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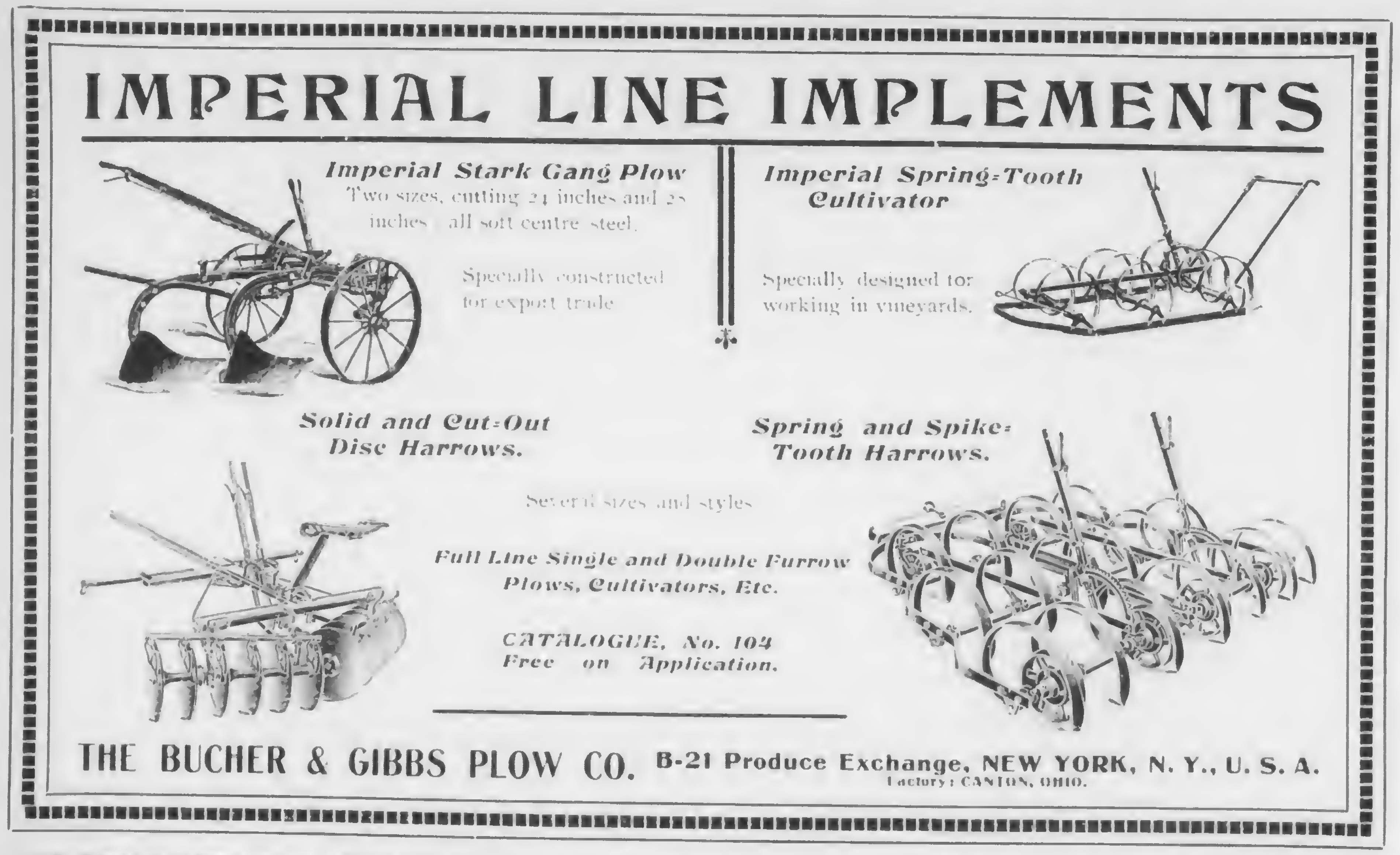
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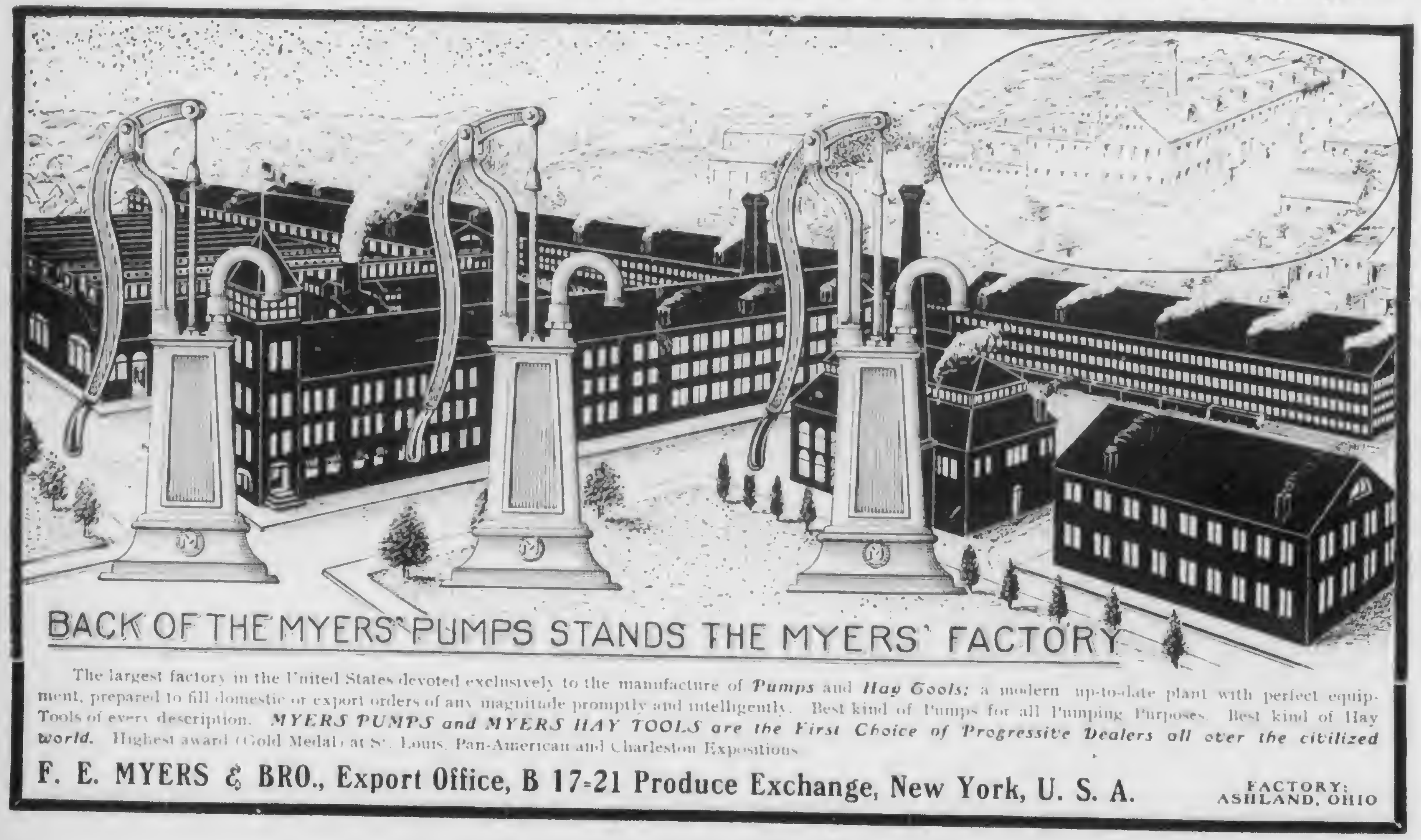

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Dederick Sons, P. K., Albany, N. Y. 36
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Linge (machines à laver le)
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Wäsche Waschmaschinen
"1900" Washer Co., Binghamton, N. Y. 36

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Charbon (wagons pour)
Carros para Carbón de Piedra
Kohlenwaggons
Lansing Wheelbarrow Co., Lansing, Mich. 31

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Canales para Descargar Carbón de Piedra
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Mais (Concasseurs de)
Trituradoras de Maiz
Mais Zerquetschmaschinen
Sprout, Waldron & Co., Muncy, Pa. 8

Corn Harvesters
Mais (Moissonneuses de)
Cosechadoras de Maiz
Mais Erntemaschinen
Standard Harrow Co., Utica, N. Y. . . . .

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Mais (Semoirs de, à main)
Sembradoras de Maiz (A Mano)
Maispflanzer (für Handbetrieb)
Ohio Cultivator Co., The, Bellevue, Ohio 33
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Corn Planters (Horse)
Mais (Semoirs de, à cheval)
Sembradoras de Maiz (para Caballo)
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Avery Mfg. Co., Peoria, Ill. . . . . [illegible]
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Corn Shellers (Hand)
Mais (Egrenoirs de, à main)
Descascaradoras de Maiz (de Mano)
Mais Pflanzmaschinen (für Handbetrieb)

Marseilles Mfg. Co., Marseilles, Ill.	4
Patch, A. H., Clarksville, Tenn.	5
Sprout, Waldron & Co., Muncy, Pa.	3
Standard Harrow Co., Utica, N. Y.	3
U. S. Wind Engine and Pump Co., Batavia, Ill.	33

Corn Shellers (Power)
Mais (Egrenoirs de), á énergie mecanique
Descascaradoras de Maiz (para Fuerza mecánica)
Mais Pflanzmaschinen für Pferdebetrieb)

Freeman & Sons Mfg. Co., S., Racine, Wis.	3
Marseilles Mfg. Co., Marseilles, Ill.	4
Patch, A. H., Clarksville, Tenn.	5
Sprout, Waldron & Co., Muncy, Pa.	3
Standard Harrow Co., Utica, N. Y.	3

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Coton (Semoirs de)
Sembradoras de Algodon
Baumwoll Pflanzmaschinen

Ohio Cultivator Co., The, Bellevue, Ohio	33

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Garten Pflüge (für Handbetrieb)

Deere Plow Co., John, Moline, Ill.	31
Moline Plow Co., Moline, Ill.	6
Standard Harrow Co., Utica, N. Y.	3

Cultivating Machinery (Horse and Field)
Culture du sol (Instruments pour la), **à cheval** et pour le champ
Maqninaria Cultivadora (de Caballo y para el Campo)
Bodenkultur Geräte (für Pferdebetrieb)

Avery Mfg. Co., Peoria, Ill.	*
Bradley Mfg. Co., David, Bradley, Ill.	1
Deere Plow Co., John, Moline, Ill.	31
Moline Plow Co., Moline, Ill.	6
Ohio Cultivator Co., The, Bellevue, Ohio	33
Standard Harrow Co., Utica, N. Y.	3

Engines and Boilers (Stationary)
Machines à vapeur et Chaudières (fixes)
Máquinas de Vapor y Calderas (Fijas)
Maschinen und Kessel (Stationär)

Leffel & Co., James, Springfield, Ohio	29

Engines (Traction and Portable)
Machines à vapeur (Pour la traction et transportables)
Máquinas (De Tracción y Portátiles)
Traktions- oder Zugmaschinen und Lokomobilen

Avery Mfg. Co., Peoria, Ill.	*

Feed and Ensilage Cutters
Coupe-aliments, coupe-ensilage
Cortadora de Forraje y Ensilaje
Futter- und Grünfutter (Ensilage) Schneidemaschinen

Freeman & Sons Mfg. Co., S., Racine, Wis.	3
Marseilles Mfg. Co., Marseilles, Ill.	4
Silver Mfg. Co., Salem Ohio	35

Feed Mills
Moulins pour aliments
Molinos de Frorraje ó Pieaso
Futtermühlen

Sprout, Waldron & Co., Muncy, Pa.	3

Files (Letter and Card)
Systèmes de classification (lettres et cartes)
Guarda-Cartas y Tarjetas
Skripturenordner (für Briefe und Karten)

Forgings (Carriage)
Pièces forgées (Voiture)
Forjaduras (para carruajes)
Schmiedereien (Kaleschen-)

Gardening Tools (Hand)
Jardinage (Outils de) à main
Herramientas de Horteiano (de Mano)
Gärtnerei Handwerkzeug

Grain Cleaning Machinery (Rice, Coffee, Grain, Etc.)
Grains (Machines à nettoyer les): riz, **café, grain**, etc.
Maquinaria pare Limpiar Granos (Arroz, **Café**, Granos, Etc.)
Getreide Reinigungsmaschinen (für Reis, Kaffee, Korn, u. s. w.)

Sprout, Waldron & Co., Muncy, Pa.	3

Grain Drills
Grains (Semoirs de)
Sembradoras de Granos
Drillmaschinen

Monitor Drill Co., Minneapolis, Minn.	35
Superior Drill Co., Springfield, Ohio	36

Grain Grinding Mills
Grains (Moulins à moudre les)
Molinos para Granos
Schrotmühlen

Flint & Walling Mfg. Co., Kendallville, Ind.	3
Freeman & Sons Mfg. Co., S., Racine, Wis.	3
Kelly Co., The O. S., Springfield, Ohio	36
Marseilles Mfg. Co., Marseilles, Ill.	4
Sprout, Waldron & Co., Muncy, Pa.	3
U. S. Wind Engine and Pump Co., Batavia, Ill.	33

Hand Carts (Push)
Charrettes à bras
Carretillas de Mano (de Empuje)
Hand-Schiebekarren

Bradley Mfg. Co., David, Bradley, Ill.	1
Deming Co., The, Salem, Ohio	35
Lansing Wheelbarrow Co., Lansing, Mich.	31

Hand Tools (Shovels, Rakes, Hoes, Scythes, Forks, Etc.)
Outils à main (Pelles, râteaux, houes, faux, fourches, etc.)
Herramientas de Mano (Palas, Rastrillos, Azadones, Guadañas. Horquillas, etc.)
Handwerkzeug (Schaufeln, Rechen, Haken, Sensen, Gabeln, u. s. w.

Harrows (Disc, Spring-Tooth and Spike-Tooth)
Herses (à disques, à dents élastiques, à dents droites)
Mielgas ó Rastrillos (de Disco, con Dientes de Resorte y Otros)
Eggen (mit Scheiben-, Federzahn- und Speichenzahn-Vorrichtung)

Bradley Mfg. Co., David, Bradley, Ill.	1
Bucher & Gibbs Plow Co., Canton, Ohio	2
Collins Plow Co., Quincy, Ill.	29
Deere Plow Co., John, Moline, Ill.	31
Moline Plow Co., Moline, Ill.	6
Ohio Cultivator Co., The, Bellevue, Ohio	33
Standard Harrow Co., Utica, N. Y.	3
Wiard Plow Co., Batavia, N. Y.	5

Hay Loaders
Foin (Chargeuses de)
Cargadoras de Heno
Heu Auflader

Marseilles Mfg. Co., Marseilles, Ill.	4

Hay Presses
Foin (Presses à)
Prensas para Heno
Heu Pressen

Bradley Mfg. Co., David, Bradley, Ill.	1
Collins Plow Co., Quincy, Ill.	29
Ertel Co., George, Quincy, Ill.	6
Ohio Cultivator Co., The, Bellevue, Ohio	33
Standard Harrow Co., Utica, N. Y.	3

Hay Rakes
Foin (Râteaux à)
Rastros para Heno
Heu Rechen

Bradley Mfg. Co., David, Bradley, Ill.	1
Moline Plow Co., Moline, Ill.	6
Wiard Plow Co., Batavia, N. Y.	5

Hay Tools (For Handling Hay)
Foin (Outils pour la manipulation du)
Herramientas para Heno (para Manipular el **Heno**)
Heubearbeitungs-Apparate und Werkzeuge

Myers, F. E. & Bro., Ashland, Ohio	2
U. S. Wind Engine and Pump Co., Batavia, Ill.	33

Hods (Steel and Wood)
Auges (Acier et bois)
Artesas de Cargar (de Acero y de Madera)
Tünchkübel (Mörteltröge, aus Stabl und Holz)

Lansing Wheelbarrow Co., Lansing, Mich.	31

Implement Parts (Rake, Teeth, Knife Sections, Etc.)
Pièces de rechange (Dents de râteaux, conteaux de faucheuses, etc.)
Partes de Instrumentos (Dientes de Rastrillo, Secciones de Cuchilla, Etc.)
Theile von Landwirthschaftsgeräthen (Rechenzähne, Messertheile, u. s. w.)

Incubators
Conveuses artificielles
Incubadoras
Brutmaschinen (Inkubatoren)

Ertel Co., George, Quincy, Ill.	6

Lawn Mowers
Tondeuses de gazon
Segadoras ó Cortadoras de Césped
Rasen Mähmaschinen

Clipper Lawn Mower Co., Dixon, Ill	5
Chadborn & Coldwell Mfg. Co., Newburgh, N. Y	1

Leather (Imitation)
Leder (Imitation)
Cuero (Imitación)
Cuir (Imitation)

Fairfield Rubber Co., The, Fairfield, Conn.	5

Machine Tools
Machines-outils
Herramientas Mecánicas
Maschinen-Werkzeug

Silver Mfg. Co., Salem, Ohio	35

Mowers.
Faucheuses.
Segadoras.
Mähmaschinen.

Mills (Corn and Hominy)
Moulins (pour maïs et bouilie)
Molinos (para Moler Maiz Fino y Grueso)
Mühlen (für Getreide und indianisches Reis, Hominy)

Sprout, Waldron & Co., Muncy, Pa.	3
Standard Harrow Co., Utica, N. Y.	3

Oil Cloth
Toile Cirée
Wachstuch

Plows (Walking, Riding and Disc)
Charrues (ordinaires, à siège, à disques)
Arados (de Caminar, de Moutar y de Disco)
Pflüge (Geh-, Fahr- und Scheibenpflüge)

Avery Mfg. Co., Peoria, Ill.	*
Bradley Mfg. Co., David, Bradley, Ill.	1
Bucher & Gibbs Plow Co., Canton, Ohio	2
Collins Plow Co., Quincy, Ill.	29
Deere Plow Co., John, Moline, Ill.	31
Moline Plow Co., Moline, Ill.	6
Ohio Cultivator Co., The, Bellevue, Ohio	33
South Bend Chilled Plow Works, South Bend, Ind.	1
Standard Harrow Co., Utica, N. Y.	3
Wiard Plow Co., Batavia, N. Y.	5

Potato Machinery
Pommes de terre (Machines pour la culture des)
Maquinaria para Patatas
Kartoffel-Maschinen

Bradley Mfg. Co., David, Bradley, Ill.	1
Moline Plow Co., Moline, Ill.	6
Standard Harrow Co., Utica, N. Y.	3

Pumps, Hand and Power (Lift, Force and Spray)
Pompes, à main, et à énergie mécanique (Pompes aspirantes, foulantes, pulvérisatrices)
Bompas de Mano y para Fuerza Mecánica (Aspirantes, de Forzar y de Rociar)
Pumpen, Hand- und Kraftpumpen (Hebe-, Druck- und Besprengungs-Pumpen)

Deming Co., The, Salem, Ohio	35
Flint & Walling Mfg. Co., Kendallville, Ind.	3
Myers, F. E. & Bro., Ashland, Ohio	2
U. S. Wind Engine and Pump Co., Batavia, Ill.	33

Reapers.
Moissonneuses.
Cosechadoras
Getreide-Mähmaschinen.

Rollers (Field or Road)
Rouleaux (pour champs et pour routes)
Rodillos (para Campo y para Caminos)
Feld- und Weg-Walzen

Bradley Mfg. Co., David, Bradley, Ill.	1
Lansing Wheelbarrow Co., Lansing, Mich.	31
Ohio Cultivator Co., The, Bellevue, Ohio	33
Standard Harrow Co., Utica, N. Y.	3

Rubber Goods
Articles de caoutchouc
Articulos de Caucho
Gummiwaaren

Rubber Tires
Gummireifen
Bandes de roues en caoutchouc
Llantas de Caucho para Ruedas

Morgan & Wright, Chicago, Ill.	1

Scrapers (Road)
Ratissoires (pour routes)
Dragas (para Caminos)
Strassen Scharr-Maschinen (Strassen-Ebener)

Standard Harrow Co., Utica, N. Y.	3

Seeders, Broadcast (Grain and Grass)
Semoirs pour semer à la volée (Grain et graminées)
Máquinas de Sembrar Semillas al Vuelo (Granos y Semilla de Yerbas)
Breitsämaschinen (für Getreide und Gras)

Freeman & Sons Mfg. Co., S., Racine, Wis.	3

Sharpeners and Grinders
Machines à remoudre et à aiguiser
Afiladoras y Amoladoras
Schärfe- und Schleif-Apparate

Sleighs
Traineaux
Trineos
Schlitten

Dapson & Wolf, Oneida, N. Y.	5

Sprayers and Nozzles
Instruments d'arrosage
Rociadoras y Boquereles
Besprengungs-Spritzen und Uebernasen

Deming Co., The, Salem Ohio	35
Flint & Walling Mfg. Co., Kendallville, Ind.	3
Myers, F. E. & Bro., Ashland, Ohio	2
Standard Harrow Co., Utica, N. Y.	3

Stalk Cutters
Coupe-chaume
Cortadoras de Tallos
Stengel Abschneider

Street Sprinklers
Arrosage des rues (Tonneaux pour l')
Regadoras de Calle
Strassen Bespreng-Wagen

Studebaker Bros. Mfg. Co., South Bend, Ind.	31

Sugar Cultivating Implements
Sucre (Instruments pour la culture de la canne à)
Instrumentos para el Cultivo Azucarero
Zucker-Anbau Geräthe

Threshing Machinery
Machines à battre
Maquinaria de Trillar
Dresch Maschinen

Avery Mfg. Co., Peoria, Ill.	*

Tire Setters
Machines à fixer les bandes de roues
Máquinas de Poner Llantas
Maschinen zum Aufsetzen von Gummireifen

Standard Tire Setter Co., Keokuk, Iowa	35

Tread Powers (Horse, Dog, Sheep, Etc.)
Machines à utiliser l'énergie de la marche (Cheval, Chien, Mouton, etc.)
Motores de Pisada (para Caballo, Perro, **Carnero**, etc.)
Kraft-Tretmaschinen (Pferde, Hunde, **Schafe** u. s. w.)

Trucks (Hand Warehouse)
Trucs (Emmagasinage à bras)
Carretillas de Mano para almacén
Transport Handwagen (für Waarenhäuser)

Lansing Wheelbarrow Co. Lansing, Mich.	31

Wagons (Business)
Charettes (d'affaires)
Carros (para negocios)
Wägen (Geschäftswägen)

Fulton & Walker Co., Philadelphia, Pa. 29

Wagons and Buck-Wagons
Charrettes et charrettes à lessive
Carretones y Carretas
Wägen und Bockwägen

Ohio Valley Wagon Co., The, Marietta, Ohio . . . . .

Wagons and Carts (Farm)
Wagonnets et charrettes (Ferme)
Carretones y Carretas (para Hacienda)
Landwirthschaftliche Wagen und Karren

Avery Mfg. Co., Peoria, Ill. . . . . *
Lansing Wheelbarrow Co., Lansing, Mich. 31
Studebaker Bros. Mfg. Co., South Bend, Ind. 31

Weeders
Sarcloirs mécaniques
Desyerbadoras
Jäte Maschinen

Standard Harrow Co., Utica, N. Y. 3
Wiard Plow Co., Batavia, N. Y. 5

Well Tools and Drilling Machinery
Outils pour puits et machines à forer
Instrumentos para Abrir Pozos y Maquinaria para Horadar
Brunnen-Werkzeug und Bohr-Maschinen

Flint & Walling Mfg. Co., Kendallville, Ind. 3

Wheelbarrows
Brouettes
Carretillas
Schiebekarren

Lansing Wheelbarrow Co., Lansing, Mich. 31

Wheels (Carriage)
Roues (Voiture)
Ruedas (Carruaje)
Räder (Kaleschen und Wagen)

Wheels and Wheel Materials
Roues et articles pour roues
Ruedas y Materiales para Ruedas
Räder und Rädermaterialien

Windmills (Towers and Tanks)
Moulins à vent (Tours et réservoirs)
Molinos de Viento (Torres y Tanques)
Windmühlen (Thurm- und Bütten)

Flint & Walling Mfg. Co., Kendallville, Ind. 3
Freeman & Sons Mfg. Co., S., Racine, Wis. 3
Marseilles Mfg. Co., Marseilles, Ill. 4
U. S. Wind Engine and Pump Co., Batavia, Ill. 33

Wood Sawing Machinery
Bois (Machines à scierie)
Maquinaria para Aserar Madera
Holzsäge-Maschinen

Marseilles Mfg. Co., Marseilles, Ill. 4
U. S. Wind Engine and Pump Co., Batavia, Ill. 33

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Annonces par ordre Alphabétique.
Lista Alfabética de las casas que se Anuncian en esta Revista.
Alphabetisch geordnetes Inhalts-Verzeichnis von Inserenten.

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Bradley Mfg. Co., David, Bradley, Ill. 1
Bucher & Gibbs Plow Co., Canton, Ohio 2

Chadbourn & Coldwell Mfg. Co., Newburgh, N. Y. 1
Clipper Lawn Mower Co., Dixon, Ill 5
Collins Plow Co., Quincy, Ill. 29
Columbus Bolt Works, Columbus, Ohio 36

Dapson & Wolf, Oneida, N. Y. 5
Dederick's Sons, P. K., Albany, N. Y. 36
Deere Plow Co., John, Moline, Ill. 31
Deming Co., The, Salem, Ohio 35

Ertel Co., Geo., Quincy, Il. 6

Fairfield Rubber Co., The, Fairfield, Conn. 5
Flint & Walling Mfg. Co., Kendallville, Ind. . . 3
Freeman & Sons Mfg. Co., S., Racine, Wis. . . . 3
Fulton & Walker Co., Philadelphia, Pa. 29

Kelly Co., The O. S., Springfield, Ohio 36

Lansing Wheelbarrow Co., Lansing, Mich. 31
Leffel & Co., James, Springfield, Ohio 29

Marseilles Mfg. Co., Marseilles, Ill. 4
Moline Plow Co., Moline, Ill. 6
Monitor Drill Co., Minneapolis, Minn. 35
Morgan & Wright, Chicago, Ill. 1
Myers & Bro., F. E., Ashland, Ohio 2

"1900" Washer Co., Binghamton, N. Y. 35

Ohio Cultivator Co., The, Bellevue, Ohio 33

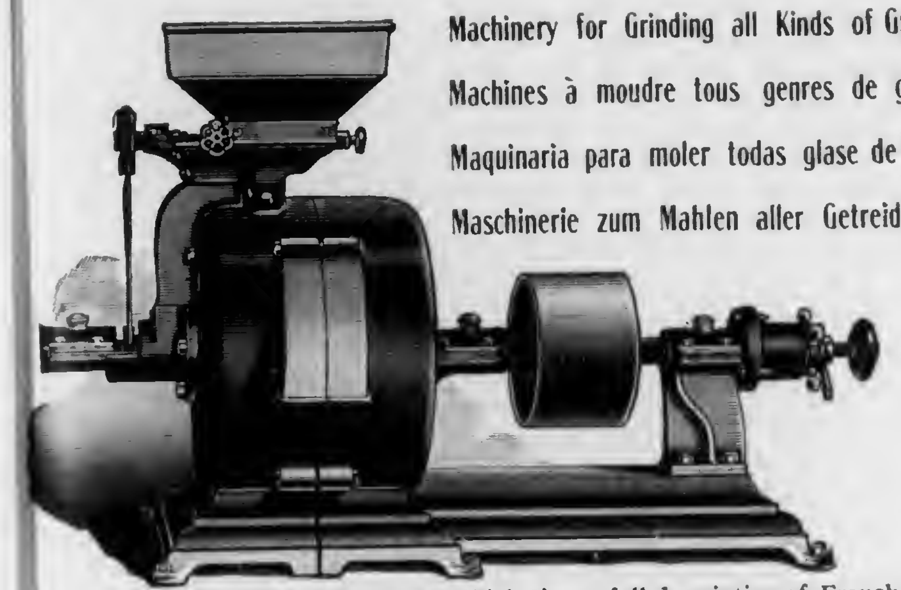
Patch, A. H., Clarksville, Tenn. 5
Potter Co., Morgan, Fishkill-on-Hudson, N. Y. . 5

Sargent & Son, D. F., Geneseo, Ill. 31
Silver Mfg. Co., The, Salem, Ohio 35
Sprout, Waldron & Co., Muncy, Pa. 3
Standard Harrow Co., The, Utica, N. Y. 3
Standard Tire Setter Co., Keokuk, Iowa 35
Studebaker Bros. Mfg. Co., South Bend, Ind. . . . 31
Superior Drill Co., Springfield, Ohio 36
South Bend Chilled Plow Co., South Bend, Ind. . 1

U. S. Wind Engine and Pump Co., Batavia, Ill. . 33

Wiard Plow Co. Batavia. N. Y. 5

Machinery for Grinding all Kinds of Grain
Machines à moudre tous genres de grains
Maquinaria para moler todas glase de granos
Maschinerie zum Mahlen aller Getreidesorten



Write for one of our booklets which gives a full description of French Burr and Attrition, Feed and Meal Mills, Cotton Seed and Linseed Oil Cake Mills, Emery Rock Mills, Cotton, Ear and Ore Crushers, Magnetic Separators, Corn Shellers, etc.

Ecrivez pour un pamphlet contenant description détaillée de moulins à meules de France et à frottement, de moulins pour grains de cotton et de tourteaux de lin, de moulins à pierre d'émeri, de broyeurs d'épis et de minérais, de moulins magnétiques, d'écosseurs, etc.

Escríbasenos pidiendo uno de nuestros libritos, en que se da una completa descripción de nuestros Molinos de Piedra Francesa y de Roce, para Pienso y para Harina, Molinos de Semillas de Algodón, y para moler Tortas de Aceite de Semillas de Linaza, Molinos para Roca de Esmeril, Trituradoras de Algodón, Mazorcas y Minerales, Separedoras Magnéticas, Desgranadoras de Maiz, etc.

Man verlange eines unserer Büchlein, das volle Beschreibung unserer französischen Mahlsteine und Reibevorrichtung enthält, wie auch aller Futter-Vorrichtungen, Mehl-Mühlen, Baumwollensaamen- und Leinölsaamen Kuchen-Mühlen, Schmirgel-Bergmühlen, Baumwollen-, Aehren- und Erzzerstückelungs-Maschinen, magnetische Separatoren, Korn-Enthülsemaschinen, u. s. w.

SPROUT, WALDRON & CO.

Drawer M. MUNCY, PA., U. S. A.

The Standard Harrow Co.

UTICA, N. Y., U. S. A.

ABERDEEN, SR. SPRING-TOOTH HARROW

Unequalled Strength
No Clogging
Reversible Points on Teeth

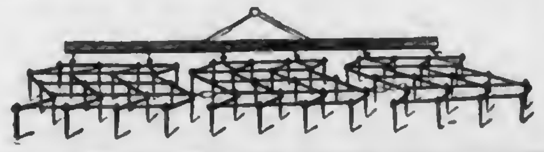
THE STANDARD LINE includes one and two-section Spring-Tooth Harrows and all styles and sizes of Spike-tooth and Disc Harrows, Cultivating Implements, Potato Harvesters, Potato Sprayers, etc., and is one of the most favorably known lines in the leading agricultural countries.

We guarantee prompt service for all export orders. Our factory is only five hours' ride from New York City.

WRITE IN YOUR OWN LANGUAGE FOR CATALOGUE F

ZIG ZAG STEEL SPIKE-TOOTH HARROW

20-Tooth Sections
½-inch Teeth



Advertise your business through the columns of the Export Implement Age; it will pay you. Let us send you rates.

Write us for catalogue No. 34, illustrating and describing the **FREEMAN Windmills, Towers, Feed and Ensilage Cutters, Fodder Shredders, Overhead and Sweep Horse-Powers, Wood-Sawing Outfits, Corn Shellers, Grinding Mills, Fanning Mills, Broadcast Sowers, etc.**

Ecrivez-nous pour recevoir le catalogue No. 34 décrivant et donnant les vues des machines **FREEMAN:** Moulins à vent, tours, coupe-aliments et coupe-ensilages, machines à couper le fourrage, mécaniques en l'air et balayeuses à chevaux, outillages pour scierie-mécanique à bois, égrenoirs à maïs, moulins à moudre, moulins d'aérage, semoirs à la volée, etc.

Man schreibe uns und verlange Katalog No. 34, welcher die folgenden Freeman'schen Geräthe illustrirt und beschreibt: Windmotoren, Thürme, Futter- und Ensilagen-Schneidemaschinen, Futter Zerschneideapparate, überirdische- und Reinigungs-Pferdekräfte, Ausrüstungsapparate zum Holzsägen, Maisenthülser, Mahlmühlen, Kornschwingen und Schwingapparate, Breitwurfsäemaschinen, u. s. w.

Escribidnos pidiéndonos el Catalogo número Treinta y Cuatro, en que se ilustran con grabados y se describen los Molinos de Viento, Torres, Cortadoras de Pienso y de Ensilaje, Cortadoras de Forraje, Desmenuzadoras, Fuerza Motriz de arriba y de barrida, Habilitaciones para Aserrar Maderas, Descascaradoras de Maiz, Maquinas de Moler, Maquinas de Aventar, Sembradoras al Vuelo, etc., todo de fabricación y marca "Freeman."

S. FREEMAN & SONS MFG. CO., Racine, Wis., U. S. A.

A Windmill that does satisfactory work naturally is the one you want. The "STAR" is the one that pleases. Our booklets in English, German, French and Spanish tell all about

"STAR" WINDMILLS

designed for the heavy and varied work required of them abroad. The "STAR" is built in all sizes, thoroughly galvanized, has ball bearings and is the easiest running Mill made.

For many years we have been exporting Windmills and know what is needed to meet all requirements and please our foreign friends. We understand how these goods should be packed for safe delivery, and the packing receives our most careful attention. With all the required parts at hand and properly fitted it facilitates the assembling and erecting of the Mills.

We build **Hand and Windmill Pumps** of various designs, all sizes of **Pine, Cypress** and **Galvanized Steel Tanks, Galvanized Steel Towers** any height, **Power Windmills** for grinding feed and running light machinery and **Steel Substructures** all heights, to support Tanks of any capacity.

"STAR" PUMPING MILL

CORRESPONDENCE INVITED

FLINT & WALLING MFG. CO. KENDALLVILLE Indiana, U. S. A.

New York Office, 96 Wall Street, New York, U. S. A.

Cable Address, "STAR," Kendallville, Ind. Codes, "Lieber," "A. B. C. 4th edition," "Western Union" and "Private."

TIGHT BINDING TEXT CUT OFF

Wagons (Business)
Charettes (d'affaires)
Carros (para negocios)
Wägen (Geschäftswägen)

Fulton & Walker Co., Philadelphia, Pa. 29

Wagons and Buck-Wagons
Charrettes et charrettes à lessive
Carretones y Carretas
Wägen und Bockwägen

Ohio Valley Wagon Co., The, Marietta, Ohio . . . . . .

Wagons and Carts (Farm)
Wagonnets et charrettes (Ferme)
Carretones y Carretas (para Hacienda)
Landwirthschaftliche Wagen und Karren

Avery Mfg. Co., Peoria, Ill. . . . . *
Lansing Wheelbarrow Co., Lansing, Mich. 31
Studebaker Bros. Mfg. Co., South Bend, Ind. 31

Weeders
Sarcloirs mécaniques
Desyerbadoras
Jäte Maschinen

Standard Harrow Co., Utica, N. Y. 3
Wiard Plow Co., Batavia, N. Y. 5

Well Tools and Drilling Machinery
Outils pour puits et machines à forer
Instrumentos para Abrir Pozos y Maquinaria para Horadar
Brunnen-Werkzeug und Bohr-Maschinen

Flint & Walling Mfg. Co., Kendallville, Ind. 3

Wheelbarrows
Brouettes
Carretillas
Schiebekarren

Lansing Wheelbarrow Co., Lansing, Mich. 31

Wheels (Carriage)
Roues (Voiture)
Ruedas (Carruaje)
Räder (Kaleschen und Wagen)

Wheels and Wheel Materials
Roues et articles pour roues
Ruedas y Materiales para Ruedas
Räder und Rädermaterialien

Windmills (Towers and Tanks)
Moulins à vent (Tours et réservoirs)
Molinos de Viento (Torres y Tanques)
Windmühlen (Thurm- und Bütten)

Flint & Walling Mfg. Co., Kendallville, Ind. 3
Freeman & Sons Mfg. Co., S., Racine, Wis. 3
Marseilles Mfg. Co., Marseilles, Ill. 4
U. S. Wind Engine and Pump Co., Batavia, Ill. 33

Wood Sawing Machinery
Bois (Machines à scierie)
Maquinaria para Aserar Madera
Holzsäge-Maschinen

Marseilles Mfg. Co., Marseilles, Ill. 4
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Collins Plow Co., Quincy, Ill. 29
Columbus Bolt Works, Columbus, Ohio 36

Dapson & Wolf, Oneida, N. Y. 5
Dederick's Sons, P. K., Albany, N. Y. 36
Deere Plow Co., John, Moline, Ill. 31
Deming Co., The, Salem, Ohio 35

Ertel Co., Geo., Quincy, Il. 6

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Fulton & Walker Co., Philadelphia, Pa. 29

Kelly Co., The O. S., Springfield, Ohio 36

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Monitor Drill Co., Minneapolis, Minn. 35
Morgan & Wright, Chicago, Ill. 1
Myers & Bro., F. E., Ashland, Ohio 2

"1900" Washer Co., Binghamton, N. Y. 35

Ohio Cultivator Co., The, Bellevue, Ohio 33

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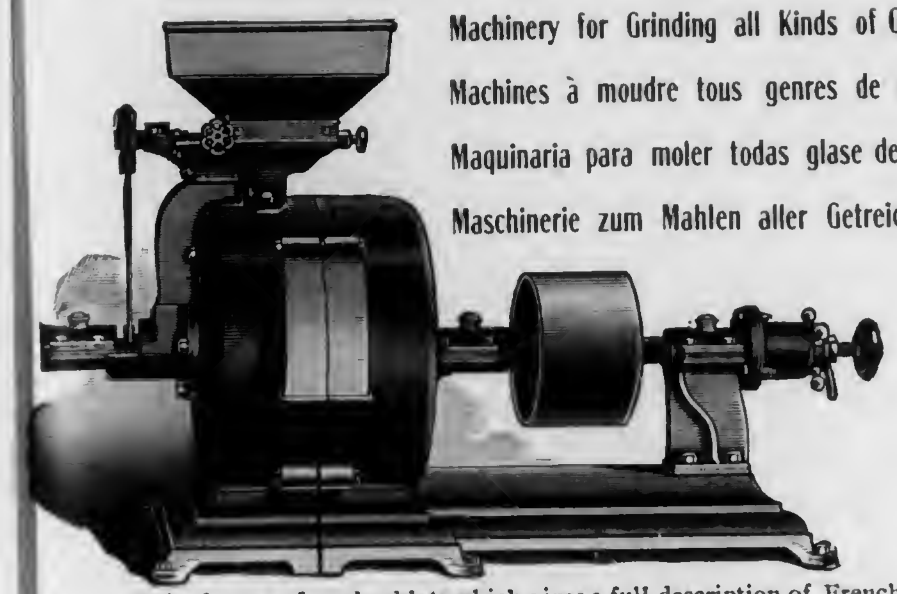

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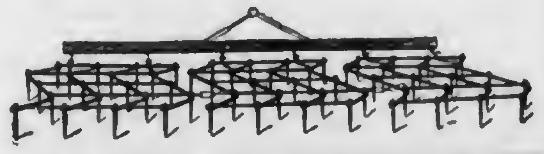

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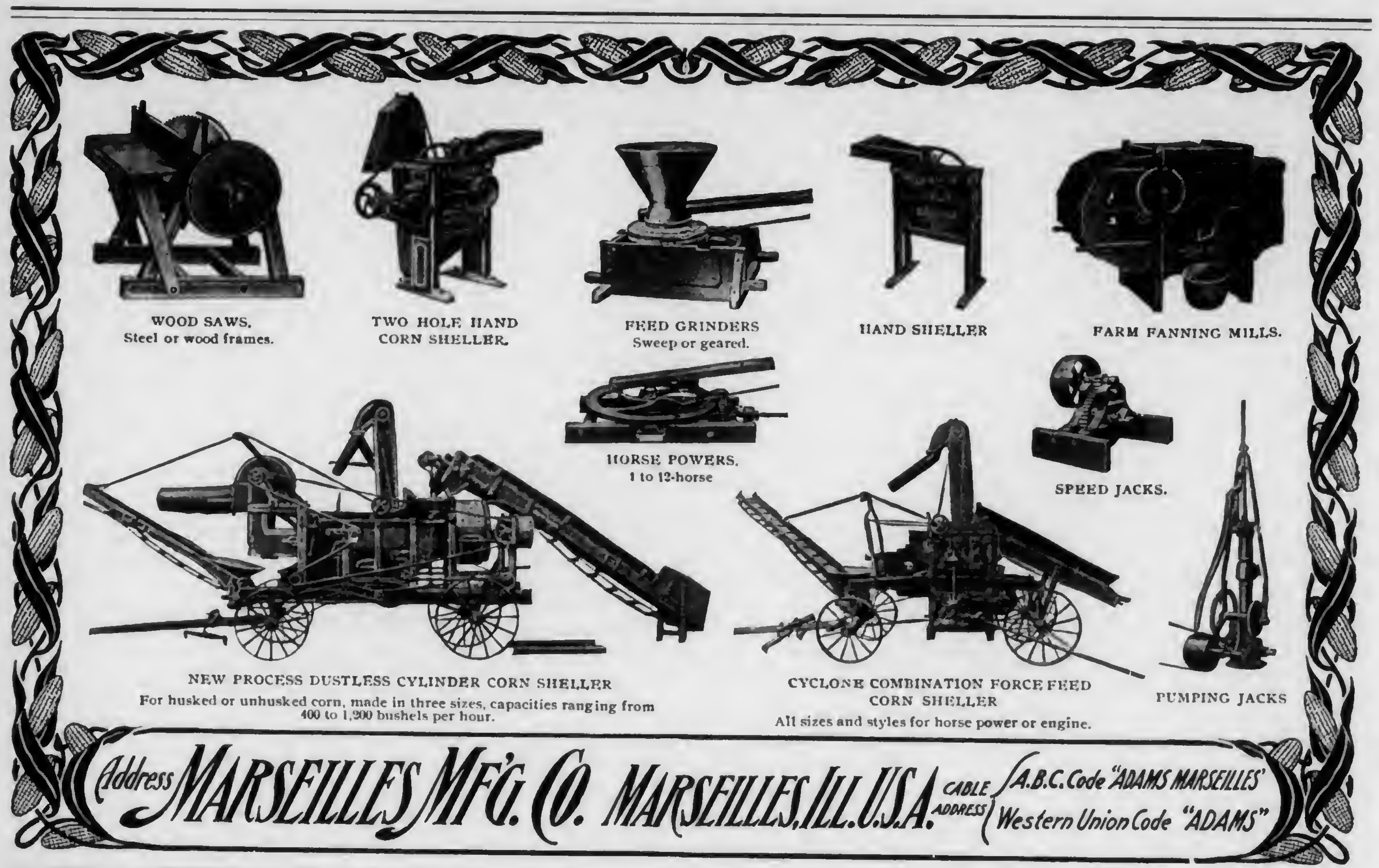
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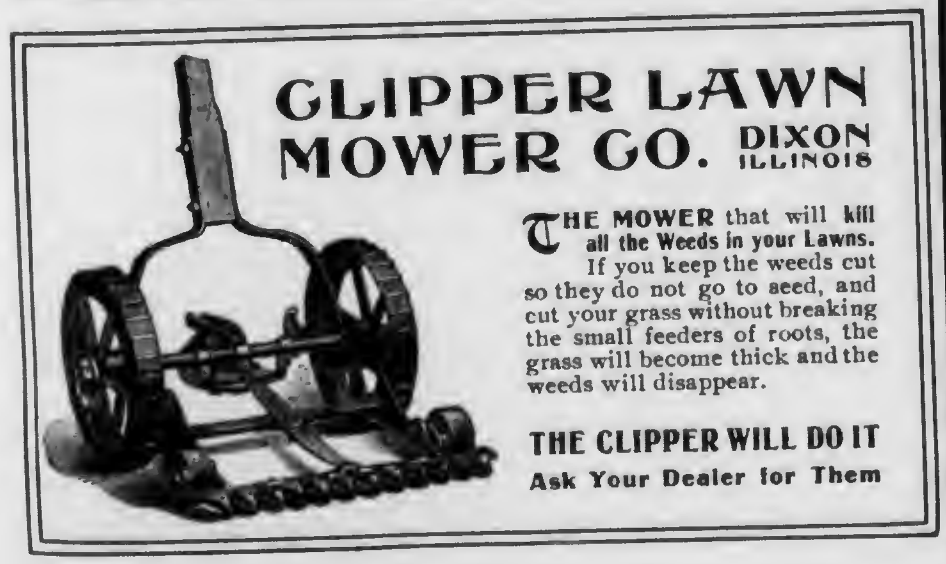

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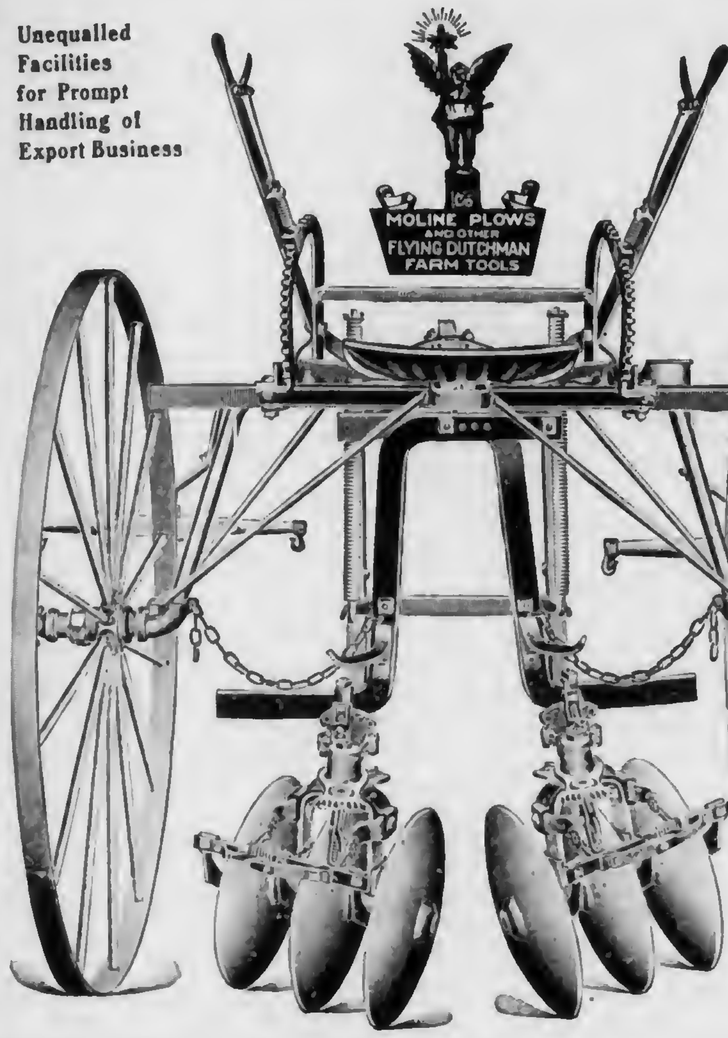

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37 YEARS building hay, straw, wool, cotton and corn fodder presses should certainly make us experts, and we claim that our presses are the simplest, easiest draught on the team and the smoothest balers on the market to-day.
Our presses will bale from 10 to 18 tons a day in hay.
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Depuis 37 années que nous construisons des presses à foin, à paille, à laine, à coton, à fourrage de maïs, nous avons indubitablement acquis une expérience qui a fait de nous des experts, et nous n'hésitons pas à dire que nos presses sont les plus simples qui soient aujourd'hui sur le marché et celles qui fatiguent le moins l'attelage et fonctionnent le plus aisément.
Nos presses emballottent de 10 à 18 tonnes de foin par jour.
Nos presses emballottent de 10 à 15 tonnes de paille par jour.

Despues de 37 años que construimos prensas para heno, paja, lana, algodón y forraje de maiz tenemos que ser expertos en ese ramo, y por lo tanto reclamamos que nuestras prensas son las más simples y las más livianas para el acarreo por parejas de caballos, y las enfardadadoras mejores que existen hoy en el mercado.
Nuestras prensas enfardan de 10 á 18 toneladas de heno por dia.
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37 Jahre ununterbrochener Fabrikation von Heupressen, Strohpressen, Wolle- und Baumwollenpressen, wie auch Maisfutter-Pressen, sollte uns wahrlich in den Stand gesetzt haben, Experten dieser Branche geworden zu sein; wir beanspruchen deshalb für unsere Pressen, dass sie die einfachsten in Konstruktion sind, beim Gespann den leichtesten Zug haben und zum Emballiren die vorzüglichsten Dienste leisten. Unsere Pressen sind im Stande 10 bis 18 "Tonnengehalt" Heu und 10 bis 15 "Tonnengehalt" Stroh täglich zu emballiren.

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Our "Gem" Full Circle

We make a line of both Full Circle and Half Circle Presses.
Prices, f. o. b. cars New York City, on our Gem Full Circle Balers, properly crated for export:

	Net Weight.	Gross Weight.	Space	Prices.
14 x 18 Baler	2,650 (1,457 Kilos)	3,700	115 cubic feet	$215.25 (£44.16.10)
16 x 18 Baler	2,775 (1,526 Kilos)	3,800	171 cubic feet	218.00 (£45. 8. 4)
17 x 22 Baler	2,975 (1,636 Kilos)	4,000	120 cubic feet	221.50 (£46. 3. 0)

Notre presse "Gem" à cercle entier

Nous fabriquons un assortiment de presses à demi-cercle et à cercle entier.
Prix de nos presses "Gem" à cercle entier, mises en wagon à New York et convenablement emballées pour l'exportation:

	Poids net.	Poids brut.	Espace.	Prix.
Presse 14 x 18	2,650 (1,457 kilos)	3,700	115 pieds cubes	$215.25 (£44.16.10)
Presse 16 x 18	2,775 (1,526 kilos)	3,800	171 pieds cubes	218.00 (£45. 8. 4)
Presse 17 x 22	2,975 (1,636 kilos)	4,000	120 pieds cubes	221.50 (£46. 3. 0)

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Nosotros fabricamos un surtido completo de prensas tanto de medio círculo como de círculo entero. Los precios de embarque de la Prensa "Gem" son franco á bordo de los carros basta New York, y se empaquetan con seguridad para exportarlas.

	Peso Bruto.	Neto.	Espacio.	Precio.
Prensa 14 x 18	2,650 (1,457 Kilos)	3,700	115 piés cúbicos	$215.25 (£44.16.10)
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Wir fabriziren ein Assortiment von Voll- und Halbzirkel-Pressen.
Preise unserer Vollzirkel Emballage-Pressen, frei Board New York, fertig für den Exportversand verpackt:

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14 x 18 Presse	2,650 (1,457 Kilo)	3,700	115 Kubikfuss	$215.25 (£44.16.10)
16 x 18 Presse	2,775 (1,526 Kilo)	3,800	171 Kubikfuss	218.00 (£45. 8. 4)
17 x 22 Presse	2,975 (1,636 Kilo)	4,000	120 Kubikfuss	221.50 (£46. 3. 0)

GEO. ERTEL CO. - 597 Kentucky Street, Quincy, Ill., U. S. A.

EXPORT IMPLEMENT AGE

Vol. XIII. Philadelphia, Pa., U. S. A., December, 1905. No. 3.

FABULOUS PROSPERITY OF AMERICAN FARMERS REPORTED BY SECRETARY WILSON

"Destroy your farms and the grass and sunflowers and cockleburrs will grow in the streets of your cities, but destroy your cities and save your farms, and the cities will spring up as if by magic"

[From the Annual Report of the Secretary of the United States Department of Agriculture]

ANOTHER YEAR OF UNSURPASSED PROSPERITY TO THE FARMERS OF THIS COUNTRY HAS BEEN ADDED TO THE MOST REMARKABLE SERIES OF SIMILAR YEARS THAT HAS COME TO THE FARMERS OF ANY COUNTRY IN THE ANNALS OF THE WORLD'S AGRICULTURE. PRODUCTION HAS BEEN UNEQUALLED; ITS VALUE HAS REACHED THE HIGHEST FIGURE YET ATTAINED; THE VALUE OF THE FARMERS' NATIONAL SURPLUS STILL MAINTAINS THE MAGNITUDE THAT HAS BUILT UP THE BALANCE OF TRADE BY SUCCESSIVE ADDITIONS FOR MANY YEARS SUFFICIENT TO CHANGE THE NATION FROM A BORROWER INTO A MONEY LENDER; THERE IS A CONTINUATION OF THE UNPRECEDENTED SAVINGS THAT HAVE EMBARRASSED LOCAL BANKS WITH THEIR RICHES AND HAVE TROUBLED FARMERS TO FIND INVESTMENTS; AND, AS IF ALL OF THESE MANIFESTATIONS OF A HIGH DEGREE OF WELL-BEING WERE NOT ENOUGH, THE FARMS THEMSELVES HAVE INCREASED IN VALUE TO A FABULOUS EXTENT.

Farm crops have never before been harvested at such a high general level of production and value. The partial failure of two or three second-class crops makes no apparent impression upon the great aggregate of all crops.

After much laborious collection of information an estimate of the value of the crops of 1905 and of all other farm products has been made, as was done last year. The census's detailed statement of the value of all farm products was taken as the basis, and the various items have been brought down from year to year in their quantities and values. For such crops as will later receive a final estimate by the Bureau of Statistics of this Department, the figures herein used are subject to small correction. All values adopted for the various products are farm values, and are in no wise to be mistaken for exchange, middleman's, or consumer's values.

High Crop Values

CORN has reached its highest production with 2,708,000,000 bushels, a gain of 42,000,000 over the next lower year, 1899. In value, also, the corn crop of this year is higher than that of the next lower year, 1904, by $128,000,000, and the total value may be $1,216,000,000. No other crop is worth more than half as much.

HAY.—Second in order of value among all kinds of crop is the hay crop, which takes the second place back from the cotton crop, which held it for the two preceding years. Many hay crops have exceeded in tons the product of this year, but because of high prices the crop reaches a value of $605,000,000, which is higher by $34,000,000 than the value of the crop of 1893.

COTTON, including seed, stands third in value among the leading crops of the year, although some uncertainty still remains concerning its quantity and value. It can only be said that its value, including seed, is expected to rise well toward $575,000,000, and will be nearer to that figure, or above it, in proportion as the expectations of cotton planters are realized with regard to higher prices.

WHEAT.—Fears last year that the United States had fallen to the level of its consumption in the production of wheat were illfounded. The short crop of that year is followed this year by the second wheat crop in size that this country has ever produced, 684,000,000 bushels, and the value of this crop, $525,000,000, overtops the highest value before reached, in 1891, by $11,000,000.

OATS.—Fifth in order of value among the crops of the year is the oat crop, with 939,000,000 bushels, or 50,000,000 bushels under the highest production, in 1902. In value as well as yield the oat crop of this year has been exceeded in only two previous years, amounting to $282,000,000, only $22,000,000 under that of 1902.

POTATOES.—Next after oats comes the potato crop, which has been a partial failure and falls below the highest production of preceding years, that of 1904, by 72,000,000 bushels; but in value the crop has done better, since it occupies the fourth place from the highest, and is valued at $138,000,000, or only $13,000,000 below the highest preceding value, that for 1903.

BARLEY.—The high price of barley during the last three years has much increased the size and value of this crop, so that it now occupies seventh place among the leading agricultural crops. In quantity the crop of this year, 133,000,000 bushels, is third among annual barley crops, though only 7,000,000 bushels under the highest crop, that of 1904, and has a value of $58,000,000, or only $4,000,000 under the most valuable crop of this cereal, that of 1902.

TOBACCO, like potatoes, is an undersized crop this year, as it was last year, and, considering the difficulties in the way of placing a value upon it at this time, an estimate of $52,000,000 may be too low. At any rate, because of high prices, the entire crop almost exceeds the highest value yet reached, that of 1899.

SUGAR CANE AND SUGAR BEETS.—Although unrelated in culture, the common purpose of growing sugar beets and sugar cane permits their combination in a statement that their united value this year is estimated to be in the neighborhood of $50,000,000. This is a farm value for the raw material from which sugar, sirup, molasses, and feeding stuffs are derived in processes of manufacture.

RICE.—The rice crop is not as valuable as some other crops which are not mentioned here, yet its remarkable position entitles it to notice. Its production increased from 250,000,000 pounds of rough rice in 1899 to 517,000,000 pounds in 1903 and to 928,000,000 pounds in 1904; but the extraordinary production of 1904 fell to 637,000,000 pounds this year, and, although second in quantity, this year's crop is probably worth more than the crop of 1904, which was valued at $13,892,000.

EXCEPTIONAL GENERAL LEVEL.—While it may be observed that only one crop—corn—reached its highest production this year, four crops reached their highest value—namely, corn, hay, wheat, and rice. The general level of production was high and that of prices still higher, so that no crops for which separate estimates can be made fall below third place in total value compared with the crops of preceding years, except potatoes, barley, tobacco, rye, and buckwheat. The cereals, including rice, more than maintained their previous strong position in production, and their aggregate yield is 4,521,000,000 bushels, with a farm value of $2,123,000,000, or $145,000,000 over last year.

Dairy and Poultry Products

BUTTER AND MILK.—Both butter and milk have higher prices in 1905 than in 1904, and these, combined with increased production, permit an estimate of the value of dairy products at $665,000,000, or $54,000,000 above the estimate for last year. No crop but corn produces the income that the dairy cow does.

THE FARMER'S HEN is becoming a worthy companion to his cow. The annual production of eggs is now a score of billions, and, after supplying the needs of factories, tanneries, bakeries, and other trades, they are becoming a substitute for high-priced meats, besides entering more generally into the everyday food of the people. Poultry products have now climbed to a place of more than half a billion dollars in value; and so the farmer's hen competes with wheat for precedence.

Total Wealth Production on Farms

Dreams of wealth production could hardly equal the preceding figures into which various items of the farmer's industry have been translated; and yet the story is not done. When other items, which can not find place here, are included, it appears that the wealth production on farms in 1905 reached the highest amount ever attained by the farmer of this or any other country, a stupendous aggregate of results of brain and muscle and machine, amounting in value to $6,415,000,000.

The deduction from wealth produced, made in the report of last year on account of products fed to live stock, is not continued this year because the duplication of produced wealth in the consumption of products by farm animals is much less than has been assumed and is undoubtedly more than offset by the amount of wealth produced on farms which can not be estimated or even ascertained practically by census enumerators.

It might reasonably have been supposed in 1904 that the wealth produced by farmers had reached a value which would not be equaled perhaps for some years to follow, and yet that value is exceeded by the value for this year by $256,000,000, just as the value for that year exceeded that for 1903 by $242,000,000.

The grand aggregate of wealth produced on farms in 1905 exceeds that of 1904 by 4 per cent.; it is greater than that of 1903 by 8 per cent.; and transcends the census figures for 1899 by 36 per cent., and this after a lapse of only six years.

If there is no relapse from this high position that the farmer now holds as a wealth producer, three years hence he may look back over the preceding decade, and, if he will add the annual figures of his wealth production, he will find that the farming element, or about 35 per cent. of the population, has produced an amount of wealth within these ten years equal to one-half of the entire National wealth produced by the toil and composed of the surpluses and savings of three centuries.

Domestic Animals

Horses.—In the last annual estimate made by this Department of the number and value of domestic animals on farms, nearly a year ago, it appears that the farmers' horses had never before been so numerous nor in the aggregate so valuable. First threatened by the bicycle, and later by the suburban trolley car and the automobile, neither one of these, nor all combined, have scared the farmers' horses into diminished numbers or lower prices. On the contrary, horses on farms last winter were worth $1,200,000,000, or nearly as much as the corn crop of this year, and their number was over 17,000,000. Mules also are steadily increasing, and are worth $252,000,000.

Cattle.—Milch cows also are advancing in numbers and have reached a total of 17,570,000, worth $482,000,000. Other cattle, however, have not participated in this advance, and in recent years have declined in number and total value so that last winter they numbered 43,669,000, worth $662,000,000.

Sheep and Swine.—Sheep, too, are declining in number and in total value, but swine are holding their previous position of many years, the number being 47,321,000, valued at $283,255,000.

Aggregate Increase.—In the aggregate, the value of farm animals of all sorts has increased a few million dollars within a year and has increased $240,000,000 since the census of 1900, or 9 per cent.

Features of Foreign Trade

Unparalleled Agricultural Surplus.—Out of the enormous productions of the farms of this country the wants of 83,000,000 people have been supplied, and there remains a surplus large enough to become a generous contribution to the other nations of the earth and unparalleled among them as a National agricultural surplus.

During the last fiscal year (ending June 30, 1905) the exported domestic farm products were valued at $827,000,000. This was $51,000,000 below the annual average of the five preceding years, although it was $132,000,000 above the average of the five years 1895-1899, and $157,000,000 above the average of 1890-1894.

There was a loss of $32,000,000 as compared with the exports of farm products for the fiscal year 1904. In accounting for this it is proper to notice that the decrease in the exports of grain and grain products, due to the short wheat crop, equaled $41,000,000. To this decrease is to be added a reduction of $5,000,000 in exports of packing-house products, and another of $5,000,000 in fruits, and various minor items.

On the other hand, however, there were increases of $9,350,000 in exports of cotton; $4,700,000 in oil cake and oil-cake meal; $4,000,000 in vegetable oils; $2,000,000 in rice, and various minor increases.

The relative position of farm products in domestic exports is a declining one on account of the gain in exports of manufactures, so that, while the exports of the former averaged 62.6 per cent. of all domestic exports for the five years 1900-1904, the percentage for 1905 was only 55.4 per cent.

During the last sixteen years the domestic exports of farm products have amounted to $12,000,000,000, or $1,000,000,000 more than enough to buy all the railroads of the country at their commercial valuation, and this with a mere surplus for which there was no demand at home.

Imports Mostly Noncompetitive.—In the matter of imports of farm products the total of the last fiscal year was $554,000,000, or $125,000,000 more than the annual average of the preceding five years. Over 1904 the gain was $92,000,000, which is accounted for by large increases in the imports of silk, wool, hides and skins, coffee, sugar, and molasses, against which there were relatively small decreases in imports of feathers, rice, tea, and vegetables. The imports of farm products in 1905 were 49.6 per cent. of all imports, as compared with 46.7 per cent. during the preceding five years.

Apparent Balance of Trade.—While the farmer has been a producer and a trader, he has also been an international paymaster. In his foreign trade of 1905 he had a net balance in his favor amounting to $285,000,000; in the preceding five years this favorable balance averaged $461,000,000; during the five years 1895-1899 it averaged $338,000,000, and in the five years preceding that the average was $271,000,000.

During the sixteen years past the farmer has secured a balance of $5,635,000,000 to himself in his international bookkeeping, and out of this he has offset an adverse balance of $543,000,000 in the foreign trade in products other than agricultural, and turned over to the Nation from his account with other nations $5,092,000,000.

Foreign Trade in Forest Products.—Notwithstanding the constant weakening of the National forest resources, the exports of forest products had been increasing for many years, but during the fiscal year 1905 their value was $63,000,000, which was a decline of $6,300,000 from the preceding year.

Imported forest products are either noncompetitive with those of the Nation or introduced from Canada because of insufficient domestic production. The imports of 1905 were valued at $92,000,000, an increase of $12,000,000 over the preceding year, mostly on account of increased imports of india rubber, but partly on account of increased imports of lumber and wood pulp from Canada.

Farmers' Support of Manufacturing

Not content with his other achievements, the farmer lends his strong shoulder to the support of the manufactures of the country by furnishing raw materials. Computations based upon census information disclose the fact that farm products, to some extent obtained from other countries, constitute 56.4 per cent. of the total products, and 86.8 per cent. of the total materials, of the industries utilizing agricultural products as materials, and these industries produce 36.3 per cent. of all manufactured products and use 42 per cent. of all materials employed in manufacturing.

At the same time these industries using agricultural materials employed 37.8 per cent. of all persons engaged in manufacturing, and the capital of these industries is 42.1 per cent. of the capital of all manufacturing establishments.

Restated in absolute terms, during the last census year the farm products employed in manufactures were valued at $2,679,000,000; the value of all materials, including the preceding amount, was $3,087,000,000; and the products of the industries using these materials were valued at $4,720,000,000. These industries employed 2,154,000 persons and had a capital of $4,132,000,000.

Such are the enormous interests, not engaged in agriculture, but in industries that could not maintain themselves without the farmer and his extraordinary productive ability.

Farmers Becoming Bankers

Naturally such a large class of the population as the farmers, producing wealth and surpluses to the extent that they are, have savings which they invest in various ways, since in this country the stocking and its hiding place are not the savings banks. One of the most notable outgrowths of savings by farmers is the very great multiplication of small national banks in recent years. Under the amendment to the national banking act, permitting the organization of banks with a capital of less than $50,000, as many as 1,754 of these banks were organized from March 14, 1900, to October 31, 1905, excluding those organized in the noncontiguous possessions. These banks are distributed mostly throughout the South and the North Central States in rural regions, where they depend for their business primarily and directly upon the farmers' prosperity and, secondarily, upon the village merchants and persons of other employment, who themselves are dependent upon the prosperity of the farmers.

In the Southern States 633 of these banks were organized, representing 36.1 per cent. of the total number; in the North Central States the number was 792, or 45.2 per cent. of the total. To one who is familiar with State and regional conditions it is significant to notice that in the North Central States west of the Mississippi River 513 of these banks were organized, representing 29.3 per cent. of the total number, and that in the Southwestern region, embracing Texas, Indian Territory, and Oklahoma, 397 new small banks stand for 26.2 per cent. of the total.

If the capital of these banks had been sent from Boston and New York it would have been such a proceeding as was common fifteen years ago; but, instead of coming from such an origin, the capital of these banks has come from the farmers. The State bank commissioner of Kansas, in his report for 1904, states that "it has been an era of small banks in isolated communities, and so many have been started that to-day every hamlet in the State where any considerable business is done has a bank. This increase in the number of small banks arises, first, from the fact that farmers and business men in these communities had idle money that they desired to invest and banking appealed to them," etc. The same cause for the establishment of these banks is reported from the South and North Central and Western groups of States.

Depositors in Banks

In the North Central States farmers have been depositing money in the banks until the rate of interest on deposits has fallen so low that they have diverted a large portion of their savings to permanent investments. In spite of the fact that the banks do not receive and keep all or most of the farmers' savings, the increase of bank deposits in agricultural States and larger regions is most extraordinary. The following are some examples of the increase of the deposits in all banks in the agricultural States during the year ending June 30, 1905: In Iowa and South Dakota the increase was 14.9 per cent.; in Nebraska, 13.5; in Kansas, 9.7; in North Dakota, 25. During the same time bank deposits in the great capital State of Massachusetts increased 9.1 per cent.

Still more remarkable is the bank statement for the South Central States. During the past year the deposits increased 18.1 per cent. in Texas, 21.4 in Oklahoma, 24.1 per cent. in Arkansas, and 45.7 per cent. in the Indian Territory, while throughout the whole area of that geographic division the increase was 22.8 per cent. The general average increase for the United States was 13.5.

If a comparison is made with 1896, within the latest prolonged financial depression, the comparisons are still more striking. During the ten years from that year to June 30, 1905, the bank deposits of the United States, all banks included, increased 129.2 per cent. In comparison with this is the increase of the South Atlantic States, 167.4 per cent.; of the Western or Rocky Mountain and Pacific States, 169.8 per cent.; of the North Central States, 185.5 per cent.; and still more striking is the percentage of the South Central States, 255.7 per cent.; while during the same time the deposits in the North Atlantic States increased only 102.3 per cent.

For individual States there are such increases during the ten years as 199.9 per cent. for Iowa, 239.3 per cent. for Kansas, 294 per cent. for North Dakota, and 355.7 per cent. for South Dakota. The progress of the South Central States was still more rapid, as evidenced in particular by Mississippi, with an increase of 347.1 per cent. in bank deposits; by Texas, 248 per cent.; by Oklahoma, 172.6 per cent.; and by Arkansas, with 503.8 per cent.

For the first time in the financial history of the South, deposits in the banks of that region now exceed $1,000,000,000.

The foregoing remarkable increases in bank deposits in agricultural States, as well as the increase in the number of small country banks, are directly and indirectly because of the profits that have come to the farmers from the operation of their farms. The man with the hoe has become the man with the harvester and the depositor and shareholder of the bank.

Decadence of the Crop Lien

Nothing has been of greater financial moment to the cotton planters than the profitable price of cotton during the past three years. It has been the means of lifting them out of a rut that at times filled them with despair. The crop lien, that was a necessity immediately after the civil war, is disappearing where it has not already gone and released the planters from its bondage.

For the first time in nearly half a century the cotton planter's unsecured note is now good at the bank, and his land is a safe security and is salable.

Increase in Farm Values

Such an account of the farms of the United States as is given in the foregoing matter may seem too optimistic in tone and too extravagant in expression. With the expectation that the story of the year would present this appearance, and to verify or discredit it, the Department undertook and just completed an investigation of the changes in the values per acre of medium farms since the census of 1900. The net result of these changes is an enormous increase in the values, which increase is entirely consonant with the period of high prosperity that the farmers have enjoyed since 1900, the only considerable blot upon an otherwise clean record of these years being the very deficient corn crop of 1901.

Inquiries were addressed to 45,000 correspondents, representing almost every agricultural neighborhood in the United States, and the returns of these correspondents warrant the statements that follow. The values asked for and reported include the buildings and all improvements, but no personal property.

Percentage of Gain.—During the five years last past the value of the real estate of medium farms of this country has increased 33.5 per cent., as compared with the census increase of 25 per cent. for the real estate of all farms from 1890 to 1900. The highest percentage of increase—40.8 per cent.—is found in the South Central group of States. Next to this is 40.2 for the Western group, which includes the Rocky Mountain and Pacific States. Third in order is the South Atlantic group, with 36 per cent. increase. The North Central States, containing most of the great cereal and live-stock surplus region, increased 35.3 per cent., and the lowest of all was the increase of the North Atlantic States—13.5 per cent. Thus it appears that the medium farms of the South have increased in value in a greater degree than the medium farms of the entire North as far west as the Rocky Mountains.

Farms are classified according to their principal sources of income, conforming substantially to the census classification for 1900. With this understanding, correspondents report an increase of 46.9 per cent. in value per acre for the medium cotton farms during the five years, 35 per cent. for the hay and grain farms, 34.3 per cent. for the live-stock farms, and 33.2 per cent. for the farms devoted principally to sugar cane and sugar beets. Rice farming follows with an increase of 32.2 per cent. in value per acre, while close to this is 32.1 per cent. for tobacco farms. Next in order are the farms devoted to general farming, with an increase of value per acre amounting to 30.1 per cent., after which are the fruit farms, with an increase of 27.9 per cent.; vegetable farms, 20.7 per cent.; and, lowest of all, the dairy farms, with an increase of 25.8 per cent.

Dollars of Gain Per Acre.—When a comparison is made among the various regions of the country and among the various classes of farms with regard to the number of dollars of increase, rather than the percentage of increase, the results are very different from the preceding. The medium farms of the North Central division increased on the average $11.25 per acre during the five years. In the Western division of States the increase was $5.36; in the North Atlantic States, $5.26; while the increases were lowest in the South, where in the South Atlantic division the gain was $4.93, and in the South Central, $4.66. The average increase per acre of medium farms in the United States, all classes combined, was $7.31.

Although the rate of increase for cotton farms was highest of all specialized farms, the amount of increase per acre was lowest, or $5.18. Next above this is rice, with $5.97; live stock, with $6.40; and general farming, $6.78. Rising considerably above this was the increase for dairy farms, $8.53; tobacco farms, $9.13; and hay and grain farms, $9.43. The highest increases are for vegetable farms, $11.10; sugar farms, $12.34; and fruit farms, $15.71.

Causes of Increase.—While some decreased values were found in a few places, due to local causes, the general fact of large increases in farm values was explained by correspondents with much particularity. The increase is chiefly due to better prices and more profitable results of farm operations, leading to a higher capitalization of land on account of increased net profit. But this by no means fully accounts for the marked increase discovered in farm values, when secondary causes are considered. Everywhere is revealed a more intelligent agriculture; the farmers are improving their cultural methods and are changing from less profitable to more profitable crops. They are discovering that high cost of production attends extensive agriculture, and that, on the contrary, intensive culture and intensive crops increase the net profits per acre. As disclosed in the preceding increases of average acre values, the farms of the less intensive culture and crop have increased in value less than the farms having the more valuable crops receiving high culture.

Other causes for higher values are the erection of new buildings, the keeping of buildings in better repair, better fences, tile draining of land that has been too wet, and a general improvement in farm thrift. New facilities for transportation, where existing, are everywhere reported as at once raising the value of farm lands, whether new railroads or wagon roads that will permit the hauling of larger loads and for longer distances.

Another cause of increase which has had a distinct effect by itself is the growing desire and ability of farmers, and townspeople also, to invest in farm lands as affording a safe investment, even though the rate of interest, as values now are, is not high.

Many minor causes have co-operated with the foregoing to bring about the wonderful increase in farm values during the past five years that the Department has discovered.

Grand Aggregate Increase of Value.—The correspondents reporting with regard to this matter were requested to state increases and decreases for medium farms. There are reasons for believing that the increases for this class of farms may be extended to farms below and above the medium without a material distortion of the fact as representing all farms. While the increases reported for medium farms are higher than for the more poorly kept and less productive farms, on the other hand they are lower than for the better kept and more productive farms of the highest class, which are not covered in the reports of correspondents.

Accepting, then, the increased average acre values of the various classes of medium specialized and general farms as applicable to all farms, including those above and below medium, with such pertinent qualifications as may be made, these increases are applied to the total number of farms of the various classes with results which, it is believed, are approximately correct.

With this understanding it is found that the cotton farms have increased in value $460,000,000, the most prominent increase among the States being Texas, with $115,000,000, while Georgia stands second with $77,000,000, and Mississippi third with $62,000,000. Therefore, it may be said that during the last five years the cotton plantations have had six crops of cotton, one of these crops being a permanent investment and promising to pay a good return year by year.

Sugar farms have increased in value $20,000,000, more than half of which is found in Louisiana and one-sixth in California.

Hay and grain farms have such an immense acreage that the increase for them amounts to $2,000,000,000, three-fourths of which is in the North Central States; and an even greater gain, or $2,263,000,000, was made by the live-stock farms, nearly three-fourths of this also being in the North Central States. In the case of farms having dairying as a specialty the increased value was $369,000,000; tobacco farms increased $57,000,000; rice farms, $3,300,000; fruit, $97,000,000; vegetable farms, $113,000,000; and farms devoted to general and miscellaneous purposes, $768,000,000.

In the grand aggregate of all farms of all classes the increased value equaled the enormous total of $6,133,000,000.

Every sunset during the past five years has registered an increase of $3,400,000 in the value of the farms of this country; every month has piled this value upon value until it has reached $102,000,000; that portion of the National debt bearing interest is equaled by the increased value of farms in nine months, and this increase for a little over a year balances the entire interest and non-interest bearing debt of the United States.

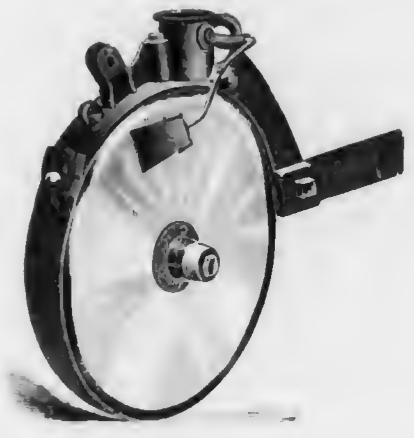
This increased value that has come to farms is invested better than in bank deposits or even in the gilt-edged bonds of private corporations.

Economic Position of Farmers

If the farmers' economic position in the United States is to be condensed to a short paragraph, it may be said that their farms produced this year wealth valued at $6,415,000,000; that farm products are yearly exported with a port value of $875,000,000; that farmers have reversed an adverse international balance of trade, and have been building up one favorable to this country by sending to foreign nations a surplus which in sixteen years has aggregated $12,000,000,000, leaving an apparent net balance of trade during that time amounting to $5,092,000,000 after an adverse balance against manufactures and other products not agricultural, amounting to $543,000,000, has been offset. The manufacturing industries that depend upon farm products for raw materials, employed 2,154,000 persons in 1900 and used a capital of $4,132,000,000. Within a decade farmers have become prominent as bankers and as money lenders throughout large areas; and during the past five years prosperous conditions and the better-directed efforts of the farmers themselves have increased the value of their farms 33.5 per cent., or an amount approximately equal to $6,133,000,000.

MONITOR SUPREMACY

It is always a pleasure for us to call the attention of our readers to mechanical inventions that are apt to prove of material aid to the agricultural interests of the world. Among



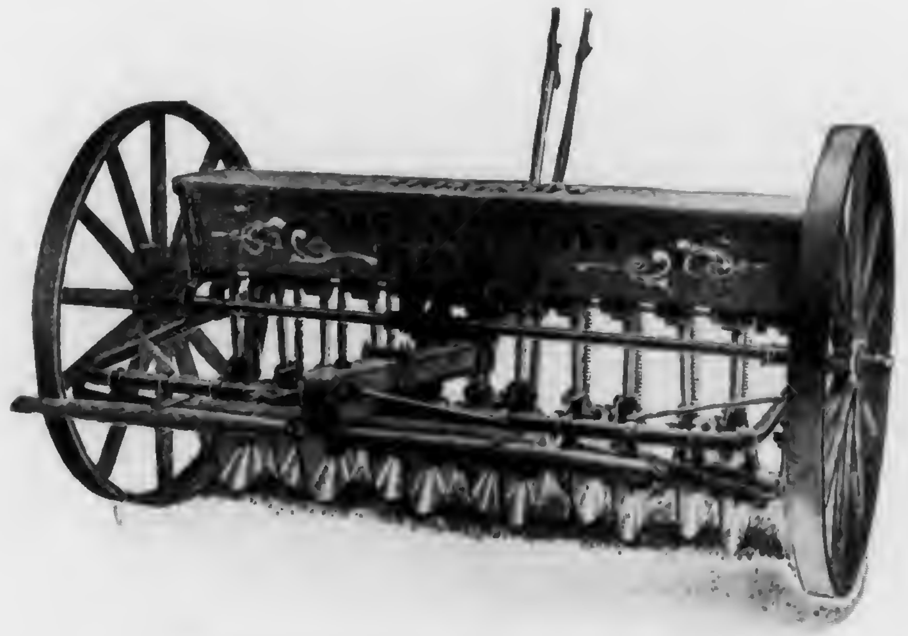
The Monitor Disc

the most important devices for the successful sowing of seed that have come to our notice, and one that is proving itself not only a great time and labor saver to the farmer, but one which virtually causes two blades of grain to grow where but one grew before, is the Monitor double disc grain drill.

This device has all the best features of the best hoe, shoe and single disc drills, but in addition, the double disc system, which causes the grain to be spread in double instead of single rows, as with all other seeding devices. The two disc plates are each 14 inches in diameter, and are made of the best saw blade steel. They revolve on a chilled axle. The hubs are fitted with metal caps, threaded so that they fit perfectly, and exclude all dirt.

These discs, working at an angle to each other, open a furrow about one inch in width, and sow the grain in double rows at the bottom of the furrow. The seed thus placed will better survive extended droughts, and the roots have the greatest possible amount of room to grow without crowding. Each double disc attachment is controlled by a separate spring so that an obstruction, such as a stone or stump, affects only the disc it strikes.

These discs are self-sharpening, and revolve, making the draft very light. They cut and pulverize the toughest soil easily, and are the only drills that will work satisfactorily in mud, gumbo, adobe or trashy land. It is claimed for this double disc device that it increases the yield from 4 to 7 bushels per acre over grain sown with other devices. This Monitor disc is covered by twelve U. S. Patents, and is the result of thirty-five years of study and practical experience in drill manufacture. It is manufactured by The Monitor Drill Co., Minneapolis, Minn., U. S. A., who will be glad to send descriptive catalogue and full information in reference to the merits of the invention.



Made by the Monitor Drill Co., Minneapolis, Minn., U. S. A.

FIRST VOYAGE OF THE AMERIKA

The new Hamburg-American Liner, Amerika, arrived at New York safely on her first transatlantic voyage, with 1,000 passengers in cabin and steerage. Among the passengers was Herr Ballin, director of the line, who said that he had never been aboard a steadier ship, and that seasickness was impossible. The Amerika is not quite as long as the Baltic, but her displacement is about 2,200 tons greater. Herr Ballin is satisfied that this is the type of ship that the public will take to. The success of the ocean restaurant experiment was conceded by all, and it is expected that a la carte meals at all hours will be the order of the day on all ocean liners.

THE POWER QUESTION

The question of a suitable and satisfactory power required for various kinds of work is one that frequently comes up for decision. It is very important to the buyer who may be located a long distance from any supply point or expert help, that he put in a power that embodies in greatest measure simplicity, safety, reliability, strength, and durability.

To meet all of these requirements in fullest measure, the well known firm of James Leffel & Co., Springfield, O., U. S. A., are offering a line of steam engines and boilers from 3 to 60 H. P. in a wide variety of sizes and styles. From the splendid work in this line being put out by said company, the foreign buyer wanting or needing power within the range of foregoing sizes will surely be able to find something entirely suited to his requirements by examining the line of engines and boilers put out by said company.

The firm of James Laffel & Co. has been continuously engaged in the manufacturing business building turbines, steam engines and boilers for over forty-two years, during which time they have had a very large and wide experience furnishing power equipment for all the varied industries throughout the world. With their knowledge of the trade requirements in different sections of the world, and the manner of packing, marking, etc., they are in position to supply work of a character that practically insures the safe delivery and satisfactory starting up and operation in the hands of the customer.

Fig. No. 1, in connection herewith, shows their Leffel Class "A" horizontal engine mounted on iron sub-base. It will be readily seen this engine is of simple, but excellent design, and very strong, stiff, well braced, and substantial construction.

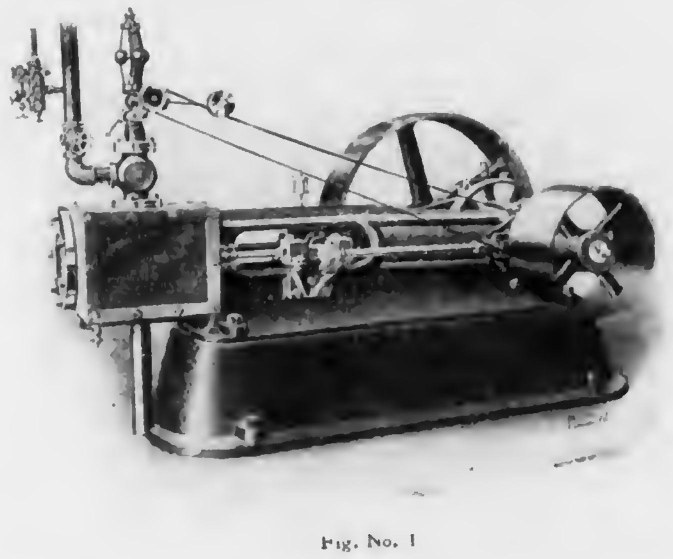


Fig. No. 1

Fig. No. 2, shows Leffel Class "A" engine mounted on Leffel self-contained return tubular or internally fired portable boiler on skids This makes a very compact and substantial outfit, that is, perfectly self-contained and does not require any foundation, nor walling in masonry. The construction is such as to afford a boiler that is most economical in the use of fuel, a splendid steamer, and most free from escaping sparks. This is suitable for burning all kinds of fuel. These outfits are also furnished with the engine detached or separate from the boiler, also mounted on four good strong metal wheels, having steel axles, making a good portable outfit that is readily moved.

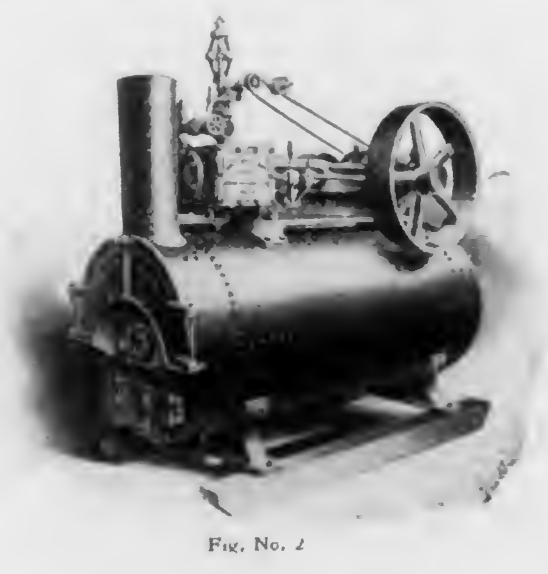


Fig. No. 2

Fig. 3 shows the improved Leffel upright submerged tube boiler, built by this company. In this boiler the tubes are always submerged below the water line, thus doing away with the trouble and expense of the tubes leaking at the top, which is very apt to occur in the plain vertical or full length tube upright boiler when the top tube head serves as the top head for the boiler and the upper ends of the tubes are not submerged in the water.

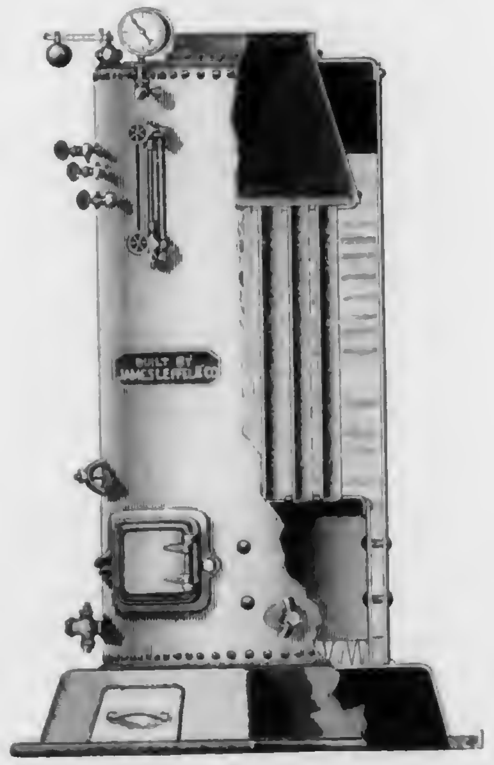


Fig. No. 3

Fig. No. 4 shows Leffel vertical engine attached to Leffel vertical submerged tube boiler all mounted on iron base. This outfit takes up little floor space, and is readily set down and put to work easily, and almost anywhere. The company is prepared to also furnish these vertical engines and boilers mounted on two wheels affording a simple and comparatively cheap portable outfit that is readily moved where wanted.

A full and complete illustrated descriptive catalog in English or Spanish, with prices, and any additional information desired, furnished free on application, stating requirements, to the manufacturers, James Leffel & Co., Springfield, O., U. S. A.

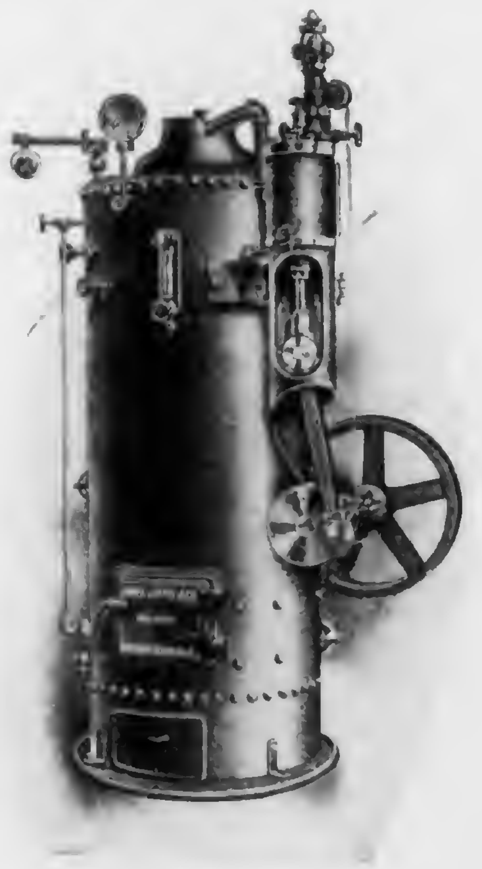


Fig. No. 4

NEW YORK'S MUNICIPAL FERRY

A new modern ferry system owned and operated by the municipality of New York city was formally put into service between the Battery and Staten Island, recently, Mayor McClellan giving the word which started the first boat loaded with city officials and guests on its fifteen-minute journey to Staten Island. The regular schedule, however, will be twenty minutes, which is ten minutes shorter than the old private line required. In his address the Mayor referred to the event as the inauguration of the greatest experiment in municipal ownership and municipal operation and the beginning of a new epoch for the city.

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AMERICAN MACHINERY EXCELS

American agricultural machinery excels in lightness and strength. While the machines made in Germany, France and England are more massive in appearance, they do not do any heavier work or last any longer than the light and graceful American machinery. This is because our manufacturers re-enforce their machines strongly at the points where the greatest strain comes, but where it is not necessary that the parts be heavy they save the material and the weight. Strong, light machines are easily operated and require less drawing power, and also affect a considerable saving in freight.

American agricultural machinery has in a very large measure overcome the early prejudice against it on account of its light appearance, and it has successfully stood the severest field tests in every country of the world.

Exports from the United States to China in the ten months ending with October, 1905, are more than twice as great as in the corresponding period of any preceding year in the history of our commerce, and in the month of October, 1905, the total was larger than in any preceding October with the single exception of October, 1904. The total value of merchandise exported from the United States to China in the ten months ending with October, 1905, was $50,104,767, against $20,557,184 in the corresponding ten months of 1904, which up to that time was the high-record year in our export trade with China.

TO OBTAIN CHEAP WHEAT

Japan is credited by *Commercial Intelligence* with the intention of establishing a steamship line to South America, her object being to get cheap wheat from Argentina. Rice, even in the army, is giving way a good deal to bread made from wheat or from a mixture of wheat and rice or other cereals. The Japanese Government recently instructed its representative in Brazil to collect and report information concerning present trade relations and possibilities between Brazil and Japan with a view to their further developments.

RICE EXPORT

The United States has entered the list of the World's rice producing and exporting countries. Figures compiled by the Department of Commerce and Labor through its Bureau of Statistics show that the exports of rice to Cuba alone in the fiscal year 1905 amounted to 34,976,414 pounds, against 698,983 pounds in the preceding year, the value of rice exported to Cuba being $993,819 in 1905, against $19,985 in 1904. The total value of rice of domestic production shipped out of the country in the fiscal year 1905, including that to the noncontiguous territory of the United States, was $5,361,641, against $667,387 in 1900 and $16,454 in 1895. Meantime the imports of rice have fallen from practically four million dollars in 1899 to two millions in 1905, and for the first time in the history of our commerce the rice exports exceed in value the rice imports. Prior to 1899 the rice imports ranged between three and four million dollars per annum, and the exports had never reached as much as $100,000 in value. In 1900, as already indicated, the exports exceeded half a million dollars, in 1901 they were about one and a half million, in 1902 they exceeded two millions, in 1903 they were two and a half millions in value, in 1904 two and three-quarter millions, and in 1905, as already indicated, $5,361,641, including in the these figures the shipments to the noncontiguous territory of the United States.

TROLLEY EXPRESS SERVICE

All the advantages of local and interurban electric lines for passenger service are familiar to Americans. Single cars between small towns can be run more frequently than it pays to run steam trains. The rates on trolley-lines are cheaper than on steam-lines. Electric cars zigzag along old highways, or across country over hill and dale, and make stops at any point; whereas the route of steam roads is determined largely by the topography of the country, and the trains stop only at widely separated stations.

Not long after trolley-lines began to join town and town, and town and country, patrons and operators saw that the advantages of passenger service on trolley-lines could be extended to freight and express service. Many electric roads in the middle West, and in New England and New York a small but increasing number, do a regular express business. In many of the larger cities the charters give the companies the right to carry freight, and in most places there is no opposition to giving electric roads this privilege.

MODERN YACHT EQUIPMENT

It is a safe prediction that before very long many of the yachts of New York millionaires will be equipped with wireless telegraphic apparatus for business purposes. Dozens of these boats are employed not so much in the way of pleasure craft as for carrying their owners up and down Long Island Sound, or the Hudson, to Manhattan and back, making the trip every weekday. They are, to all intents and purposes, private ferryboats, and a special water inclosure, or dock, provided for their accommodation at the foot of Bowling Green, is known as the Millionaires' Basin.

Most of our very rich men work hard, and their time is exceedingly valuable. Often they are extensively interested in stocks and in speculative ventures, and they can scarcely afford to be out of touch with the business world even for an hour, day or night. On land they can always be reached by the telegraph; on the water they are, for the time being, lost to civilization. Mr. Dives cannot enjoy himself satisfactorily if he feels that his amusement may be costing him a thousand dollars a minute for lack of an accessible wire.

By wireless telegraph, however, he can, while voyaging on his yacht, keep in constant communication with his office, or with his brokers in New York. He can sell stocks or transact other business; but, most important of all, he can enjoy peace of mind and freedom from anxiety lest anything is going wrong by reason of his absence. The expense, too—though that is a matter of small consequence, relatively—is trifling, the instruments required being extremely simple. One of them would be installed in the cabin of the yacht, and the other in the office in town or at the Dives' residence. In place of a tall pole an apparatus somewhat resembling a tennis racquet, and not greatly larger, with wires strung across it, is now employed for such private purposes.

It is the extreme compactness of the apparatus that has made practicable the recent installation of a wireless plant on the motor-car of a well-known New York millionaire. He uses it while touring up and down the Jersey coast for keeping in communication with a convenient railroad station, through which he can send messages or receive ordinary telegrams in regard to stocks; but, if he chose, he might easily send his orders direct to New York, or obtain news by wireless therefrom. As for the yachts, their owners could employ the wireless for hundreds of miles, if so disposed, never, even on long cruises, getting out of touch with the "shop."

THE PRESIDENT'S MESSAGE

President Roosevelt's message to Congress contains much that will be of interest to our readers and for the purpose of placing it on record in the pages of this paper, we will present a brief review of the main subjects considered. The message contains 8,000 words and is the longest message ever sent by President Roosevelt to Congress.

The control of large corporations and the regulation of railroad rates were the chief topics treated.

The tariff and currency were mentioned only casually.

The Monroe Doctrine and our relations with other republics on this continent received considerable attention, and the President made a strong recommendation for more liberal treatment of our island possessions. A summary of the principal features of the message follows:

CORPORATIONS.—The fortunes amassed through corporate organizations are so large and vest such power in those that wield them as to make it a matter of necessity to give to the government some effective power of supervision over their use.

Experience has shown that it is useless to try to get any adequate supervision over these great corporations by State action.

The present laws are entirely inadequate, so that these great corporations are subjects without a sovereign, neither the State nor the national government having effective control over them.

RATE REGULATION.—The law should secure to the agents of the government such regulation over railroads as shall summarily and effectively prevent the imposition of unjust or unreasonable rates. Some body created by Congress should have the power to decide whether a rate is reasonable and to fix a maximum beyond which it shall not be lawful to go, the decision to go into effect within a reasonable time and to be subject to review in the courts.

In case a favored shipper is given a rate so low that the enjoys an unfair advantage over his competitors, the commission should have the power to fix this favored rate as the maximum.

The railroads often give rebates in disguise. The law should make it clear that any kind of commissions made on shipments, whether in the form of a concession, fictitious damages, free pass, reduced passenger rate or the payment of brokerage, is illegal.

The best possible regulation would be that secured by an honest agreement among the railroads themselves to obey the law. The government's power to stop agreements detrimental to the public should be accompanied by the power to permit agreements in the interests of the government.

All private car lines, industrial railroads, refrigerator charges and the like should be placed under the supervision of the commission.

There should be publicity of the accounts of common carriers. The commission should have the right to say what books and memoranda a common carrier should keep, and these books and memoranda should be open to inspection.

INSURANCE FRAUDS.—Recent "flagrant scandals" have shown that certain men at the heads of the great life insurance corporations do not distinguish between honesty and dishonesty. The United States should follow the policy of other nations and provide adequate national supervision.

THE TARIFF.—Stability, rather than perfection according to some ideal, is the requisite in the tariff. Unless there are grave defects, it is wise to let the tariff alone as long as the revenues equal the expenditures. Last year there was a deficit, but it is too early yet to say that there is need of a readjustment. Should the tariff be changed, it should be along lines to obtain closer commercial relations with other nations, especially those on this continent.

THEODORE ROOSEVELT
President of the United States of America

PEACE.—The nation stands for peace, but for the peace of righteousness. Disarmament is now impracticable, but another meeting of The Hague conference could do much to remove the causes of war.

MONROE DOCTRINE.—The Monroe Doctrine is an effective instrument for peace. The United States has no desire to use it for territorial aggrandizement.

But we must see that other republics on this continent fulfil their international obligations if we are to prevent European nations from maintaining their rights or avenging their wrongs by force of arms.

SANTO DOMINGO.—The course of the United States in Santo Domingo proves the disinterestedness of this country in its dealings with weaker republics.

The government responded to the call of the islanders to help them when the little republic was threatened by urgent creditor nations abroad and by revolutions at home.

The appointment of Americans as receivers of customs put an end to the chaos, and the debts are being paid off. The treaty to continue the arrangement is before the Senate. The opposition is mainly from dishonest creditors, who would profit by the defeat of the treaty and the lapse of the republic into the former conditions.

ARMY AND NAVY.—The need of the army is manoeuvres, to familiarize the officers with the movement of large bodies of men.

The navy is large enough for the present, and construction should be with a view to the substitution of efficient for inefficient units.

IMMIGRATION.—We cannot have too much immigration of the right sort, but Congress should pass stringent laws against the admission of undesirable immigrants. Character is the only test.

There should be some provision for the better distribution of immigration. It might be possible to prohibit the landing of immigrants at New York and other Northern cities for a time and turn the tide to the South, where immigrants are needed.

THE PHILIPPINES.—There is a better outlook in the Philippines, but recent events have shown that the people are not ready for self-government. Congress should pass a law looking to the establishing of complete free trade with the islands.

PORTO RICO.—Congress should confer on the people of Porto Rico full American citizenship. There is no excuse for failure to do this.

PANAMA CANAL.—It is settled that an Isthmian Canal is feasible and that it will be built by the Panama route. The type of canal will be decided upon when the board of consulting engineers makes its report.

An appropriation is needed immediately to carry on the work of the Isthmus.

STATE DEPARTMENT.—The Consular service should be classified, and our diplomats should receive compensation commensurate with their services.

AERIAL TARGET SHOOTING

During the recent experiment conducted by M. Berteaux, the French Minister of War, in the Lebaudy dirigible balloon, aerial torpedoes were dropped with deadly accuracy from a height of 400 feet to the earth at targets twenty-five yards square. It was found that the airship could travel from thirty-five to forty kilometers an hour and could remain in the air at least six hours. It rose easily to a height of 1,500 yards, and enabled the passengers to take photographs of batteries and troops which would have been useful in an attack on the town. The balloon motor was of forty-horse power, and the envelope or gas bag had two thicknesses of silk joined with a coating of liquid rubber, which reduced the loss of gas to 2 per cent. a day. It was found that this envelope had a quality of elasticity such that bullets either did not perforate it at all or made such small holes that the escape of gas was less than negligible, the wound often closing entirely after the passage of the ball. At a height of 200 to 500 yards, the artillery in motor cars was unable to hit the balloon, and altogether it was declared that for war purposes his balloon had met successfully all the tests and that it was a new and dreadful acquisition.

IMMENSE GROWTH IN COMMERCE BETWEEN THE U. S. AND NON-CONTIGUOUS TERRITORY

The following bulletin has been issued by the United States department of commerce and labor, regarding the trade of this country with non-contiguous territory:

The commerce of the United States with its non-contiguous territory in 1905 seems likely to exceed by many million dollars that of any preceding year. The nine-month statement ending with September, issued by the department of commerce and labor through its bureau of statistics, shows that the shipments from the United States to its non-contiguous territory amounted to $36,552,174, against $29,929,079 in the corresponding months of the preceding year, an increase of $6,500,000, and that the shipments of merchandise to the United States from its non-contiguous territory in the same period amounted to $66,550,150, against $47,141,638 in the corresponding months of the preceding year, a gain of over $19,000,000. Thus the total commerce between the United States and its non-contiguous territory amounts to over $103,000,000 in the nine months ending with September, 1905, against $77,000,000 in the corresponding months of the preceding year.

These figures relate to merchandise only and do not include the gold and silver, of which the shipments from Alaska to the United States were nearly $7,000,000 of gold produced in that territory and nearly $5,500,000 of foreign gold shipped from Alaska, being presumably that originating in British territory adjacent thereto. This shows a total increase of over $25,000,000 in the trade between the United States and its non-contiguous territory in the nine months just ended, as compared with the corresponding nine months of the preceding year. It was not until 1904 that the commerce between the United States and the various areas now designated as its non-contiguous territory had reached as much as $100,000,000, but it seems likely that the total for the present year will reach fully $125,000,000.

The increase in the trade above referred to is found in the movements of commerce to and from each of the important areas in question, except in the single instance of merchandise shipped from Alaska to the United States. In this there is a falling off of a little less than $2,000,000 compared with the corresponding months of the preceding year, this reduction being apparently due to a shortage in the shipments of salmon, which in the nine months of 1905 amounted to but 17,500,000 pounds against 39,000,000 in the corresponding nine months of the preceding year, the value being $2,000,000 less than that of the corresponding months of 1904. In shipments from the United States there was an increase of nearly $2,000,000 to Alaska, of over $3,000,000 to Porto Rico, about $1,000,000 to the Philippine Islands, and nearly $1,000,000 to the Hawaiian Islands. In shipments from the non-contiguous territory to the United States there was an increase of about $5,000,000 from Porto Rico, of over $4,000,000 from the Philippine Islands, and of about $12,000,000 from the Hawaiian Islands, but a decrease, as above mentioned, of about $2,000,000 from Alaska, due apparently to a shortage in salmon shipments during the period in question.

The contrast in the trade of the United States with these territories as compared with the period prior to annexation is interesting. In the nine months ending September, 1897, the year prior to the annexation of Porto Rico, the shipments of merchandise from that island to the United States amounted to $1,767,028, as against $16,176,076 in the nine months just ended. The shipments from the Hawaiian Islands to the United States in the nine months ending with September, 1897, amounted to $13,044,231, as against $35,680,791 in the nine months just ended. The shipments from the Philippine Islands to the United States in the nine months ending with September, 1897, amounted to $3,362,060, as against $11,792,724 in the nine months just ended. For Alaska there are no figures other than estimates for years prior to 1900. On the export side (shipments from the United States to these territories), the shipments from our own ports to Porto Rico in the nine months ending with September, 1897, were $1,504,974, against the $11,486,300 in the nine months ending with September of the present year; those to the Hawaiian Islands in the nine months of 1897 were $3,766,268, against $8,968,040 in the corresponding months of the present year, and those to the Philippine Islands in the nine months of 1897, $54,660, against $4,482,537 for the nine months of the present year. In addition to the above, there are small shipments to and from the smaller islands—Guam, Midway, Tutuilla, etc. To Tutuila during the nine months ending with September, 1905, the shipments were $58,296; to the Midway Islands, $7,850.

As to the character of the articles entering into this trade with the non-contiguous territory of the United States, which promises to amount to $125,000,000 during the present year, it may be said that the chief item of shipments from the Hawaiian Islands is sugar, which amounted in that period to $33,113,471 of raw sugar and $1,752,791 of refined. This trade in shipments of refined sugar from Hawaii to the United States is quite new and aggregated in the nine months of 1905, 33,136,858 pounds, while the record of the corresponding months of the preceding year shows no shipments of refined sugar from the islands to the United States. In the trade with Porto Rico the most important of the shipments to the United States is also sugar, which amounted to $13,040,802, out of a total of $16,108,406, the next largest item being cigars, $1,812,855, leaf tobacco, $392,651, sea island cotton, $146,730, and coffee, $98,827. From the Philippines the most important shipments to the United States were Manila hemp $9,522,857, and sugar, $2,216,249, against only $342,440 of sugar in the corresponding months of last year.

The shipments to these islands and to Alaska include practically all the articles of a general character which we export to other countries. To Alaska, for example, the shipments of the nine months included $541,511 worth of breadstuffs, of which flour was $248,571, oats $152,756, and preparations for table food $57,654. In addition to this there was $190,990 worth of bituminous coal, $134,846 worth of coffee, $285,112 worth of fruits and nuts, $2,251,050 worth of manufactures of iron and steel, of which $545,089 was tin plates for use in making cans for the shipment of salmon; also $1,444,034 worth of provisions, comprising meat and dairy products. Of the $8,880,630 worth of merchandise shipped from the United States to the Hawaiian Islands, $705,250 was cotton manufactures of various sorts, largely cotton cloths, $1,009,940 manufactures of iron and steel, practically $1,000,000 worth of mineral oil, of which the bulk was shipped out of the United States in the crude form, and about $500,000 worth of lumber and manufactures of wood. To Porto Rico the shipments of cotton manufactures to $1,745,069, of which $1,210,308 was in cotton cloths. Another important item in the shipments to Porto Rico was manufactures of iron and steel, which amounted in the nine months ending September, 1905, to $1,681,682, against $548,254 in the corresponding months of the preceding year. Still another important shipment from the United States to Porto Rico was rice of domestic production amounting in the nine months ending September, 1905, to $1,918,043, and in the corresponding months of the preceding year to $1,766,681. In addition to this, there was shipped to Porto Rico in the nine months ending September 1905, $1,188,532 worth of provisions, comprising meat and dairy products. In the shipments from the United States to the Philippine Islands in the nine months ending September, 1905, manufactures of iron and steel amounted to $797,496, provisions to $340,758, boots and shoes to $147,682, and cotton cloths to $497,250, against $286,015 in the corresponding months of the preceding year.

EXPORT IMPLEMENT AGE

POUR LA CIRCULATION À L'ÉTRANGER EXCLUSIVEMENT.

Journal indépendant exclusivement consacré aux intérêts du commerce d'exportation des machines agricoles, pompes, moulins à veut, outils de fermes, fournitures pour crèmeries et articles spèciaux de quincaillerie.

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Dans le Répertoire d'adresses à l'usage des acheteurs, dans la première partie de ce livre nous donnons les renseignements en français ; nous avons recours à ce moyen afin de faciliter la correspondance avec les maisons qui font insérer des annonces dans ce journal.

On vient de construire le plus gros câble métallique dont on se soit jamais servi pour le halage. Il sera employé à Glasgow. Il a sept milles de long, 4 pouces 5 huitièmes de circonférence et pèse prés de 60 tonnes. Il est d'une seule pièce, et en acier fondu au creuset. Quand il sera posé, il formera un cercle complet autour de Glasgow, traversera la Clyde et filera à une vitesse de 15 milles à l'heure.

Un Américain vient de découvrir dans l'ile de Luzon, l'une des Philippines, un lis ou une tulipe à fleur noire d'un diamètre de huit à neuf pouces. La fleur s'épanouit avant l'apparition des feuilles, elle a une odeur de viande gâtée, qui attire les insectes, lesquels contribueront ainsi sans doute à la création de nouvelles variétés végétales. Cette plante a moins d'un pied de haut et croit sous l'ombrage d'une végétation luxuriante. Elle choque en nous l'idée que nous nous faisons de la pureté du lis et fait songer au vautour chez les oiseaux.

Afin d'éloigner le choléra, les jeunes femmes du village russe de Klimovsko, en vêtements de nuit, les cheveux dénoués, pieds nus, firent la ronde du village à minuit sonnant. L'une d'elles portant un petit fer à repasser, marchait en tête. Immédiatement derrière elle, une autre à cheval munie d'un râteau de four, portrait dans le creux de sa main du pain et du sel. A cinq pas derrière celle-ci suivaient douze jeunes filles tirant une charrue.

Vaisseau aérien au-dessus de New York

Pour la première fois les habitants de New York ont été témoins de'une démonstration pratique de navigation aérienne, donnée par le moyen du ballon dirigeable construit et manœuvre par M. A. Roy Knabenshue de Toledo é (Ohio) qui si rendit fameux en pilotant le vaisseau aérien "Arrow" à l'exposition de Saint-Louis, l'année dernière. Partant de son enclos dans un terrain inoccupé à l'ouest de Central Park, rue Soixante-deux, M. Knabenshue fit un vol d'essai jusqu'au Times Building, rue Quarante-deux et Broadway, et retour ; mercredi il manœuvra au-dessus de Broadway, dans la direction du sud, jusqu'au Flatiron Building, et revint chaque fois au parc sans mésaventure. Une immense foule suivait avec interêt les péripéties de cette nouvelle expérience de navigation aérienne, d'autant plus captivante qu'elle avait un but commercial. Un journal de New York s'était servi de l'expérience pour faire de la réclame ; il s'était arrangé avec l'aéronaute pour que celui-ci jetât tandis qu'il planerait au-dessus des rues et des toits, un certain nombre de chèques de valeurs diverses variant de 1 à 100 dollars. M. Knabenshue raconte qu'il a rencontré une remarquable série de courants qui se croisaient et qui faisaient songer à une mer houleuse dans une tempête. Il s'éleva jusqu'à 5,000 pieds, et à cette hauteur il pouvait entendre très distinctement la corne des automobiles et le gong des tramways circulant dans les rues au-dessous de lui.

La Question de la Monnaie

Les sommes d'argent que l'oncle Sam a dans ses caisses doivent être comptées chaque fois qu'il se produit un changement dans les bureaux du trésorier. Il y a huit ans quand l'Honorable Ellis H. Roberts devint trésorier, il y avait 800 millions de dollars dans le trésor. Il fallut huit mois à 50 experts pour compter cet argent. Soixante amployés du trésor sont en ce moment en train de compter le billon, l'argent de toute dénomination, jusqu'à l'obligation de 50,000 dollars, et l'on ne s'attend pas à ce que leur tâche soit achevée avant le premier mars 1906. Les femmes comptent les billets et les hommes l'or et l'argent. Une femme n'a pas perdu son temps si dans une journée de sept heures elle a pu manipuler 16,000 billets. Tout le papier-monnaie est mis en paquets. L'or et l'argent se comptent au poids. L'argent monnayé est mis dans des sacs en toile pouvant recevoir un poids de huit onces. Chaque sac contient 5,000 dollars en or et 1,000 dollars en argent. Il y a dans le trésor, à l'heure actuelle, 5,000 tonnes, dont 30,000 livres sont en or. Il coûtera 16,000 dollars au gouvernement pour compter 1,152,218,725 dollars. Evidemment, ce n'est point payer trop chèrement les hommes et les femmes qui font le travail, main ce n'en est pas moins du gaspillage, et cela montre que le gouvernement est un peu vieux jeu et n'a pas encore adopté les procédés pratiques, avancés, du monde des affaires.

Nouveau port Sud-Américain

Le port de Buenos Ayres, dans l'Amérique de Sud, n'étant pas assez profond pour permettre aux gros navires d'y pénétrer, M. Arturo Costana a obtenu une concession pour la construction d'un nouveau port dans la baie de Samborombone, à 50 milles plus près de l'Océan Atlantique, sur les bords de la Plata. Le projet prévoit une dépense d'environ 40 millions de dollars, dont la plus grande partie a été souscrite à Paris. C'est, dit-on, à une compagnie de Manchester (Angleterre) que les travaux de construction du port on, été adjugés et d'autres compagnies sont en train de se former pour la construction de canaux, de chemins de fer, de magasoins.

Forêts et Papier

Le papier fut fabriqué à la main jusqu'en 1800, époque à laquelle les fréres Fourdrinier inventèrent la machine à fabriquer le papier. Ce sont les frères Fourdrinier qui lui ont fait subir tous les perfectionnements désirables. La machine à papier de l'heure actuelle est telle qu'elle est sortie de leurs mains. Le papier s'obtient si facilement, il est produit à si bon marché, que son utilité sans toutes les branches de l'industrie n'est guère appréciée à sa juste valeur. Arrêtons-nous une minute pour songer à ce qu'il adviendrait si la production du papier était soudainement interrompue. Il y a aux Etats-Unis plusieurs journaux du dimanche qui consomment 100 tonnes de papier pour un seul tirage, ce qui represente quelque chose comme 125 "cords" (le "cord" égale 128 pieds cubes) et le déboisement de six acres de bois de sapin complètement développé.

Le *Record*, de Philadelphie, à fait faire une expérience ayant pour but de déterminer le temps nécessaire pour transformer un arbre en un journal imprimé, prêt à être mis en circulation.

Le *Record* possédant une fabrique de papier il lui était facile de faire l'expérience ; on a trouvé qu'il fallait vingt-deux heures.

IMMENSE GROWTH IN COMMERCE BETWEEN THE U. S. AND NON-CONTIGUOUS TERRITORY

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These figures relate to merchandise only and do not include the gold and silver, of which the shipments from Alaska to the United States were nearly $7,000,000 of gold produced in that territory and nearly $5,500,000 of foreign gold shipped from Alaska, being presumably that originating in British territory adjacent thereto. This shows a total increase of over $25,000,000 in the trade between the United States and its non-contiguous territory in the nine months just ended, as compared with the corresponding nine months of the preceding year. It was not until 1904 that the commerce between the United States and the various areas now designated as its non-contiguous territory had reached as much as $100,000,000, but it seems likely that the total for the present year will reach fully $125,000,000.

The increase in the trade above referred to is found in the movements of commerce to and from each of the important areas in question, except in the single instance of merchandise shipped from Alaska to the United States. In this there is a falling off of a little less than $2,000,000 compared with the corresponding months of the preceding year, this reduction being apparently due to a shortage in the shipments of salmon, which in the nine months of 1905 amounted to but 17,500,000 pounds against 30,000,000 in the corresponding nine months of the preceding year, the value being $2,000,000 less than that of the corresponding months of 1904. In shipments from the United States there was an increase of nearly $2,000,000 to Alaska, of over $3,000,000 to Porto Rico, about $1,000,000 to the Philippine Islands, and nearly $1,000,000 to the Hawaiian Islands. In shipments from the non-contiguous territory to the United States there was an increase of about $5,000,000 from Porto Rico, of over $4,000,000 from the Philippine Islands, and of about $12,000,000 from the Hawaiian Islands, but a decrease, as above mentioned, of about $2,000,000 from Alaska, due apparently to a shortage in salmon shipments during the period in question.

The contrast in the trade of the United States with these territories as compared with the period prior to annexation is interesting. In the nine months ending September, 1897, the year prior to the annexation of Porto Rico, the shipments of merchandise from that island to the United States amounted to $1,767,028, as against $16,176,076 in the nine months just ended. The shipments from the Hawaiian Islands to the United States in the nine months ending with September, 1897, amounted to $13,044,231, as against $35,080,701 in the nine months just ended. The shipments from the Philippine Islands to the United States in the nine months ending with September, 1897, amounted to $3,362,060, as against $11,702,724 in the nine months just ended. For Alaska there are no figures other than estimates for years prior to 1900. On the export side (shipments from the United States to these territories), the shipments from our own ports to Porto Rico in the nine months ending with September, 1897, were $1,304,074, against the $11,480,300 in the nine months ending with September of the present year; those to the Hawaiian Islands in the nine months of 1897 were $3,766,268, against $8,068,091 in the corresponding months of the present year, and those to the Philippine Islands in the nine months of 1897, $54,660 against $4,182,537 for the nine months of the present year. In addition to the above, there are small shipments to and from the smaller islands—Guam, Midway, Tutuilla, etc. To Tutuila during the nine months ending with September, 1905, the shipments were $58,260; to the Midway Islands, $7,850.

As to the character of the articles entering into this trade with the non-contiguous territory of the United States, which promises to amount to $125,000,000 during the present year, it may be said that the chief item of shipments from the Hawaiian Islands is sugar, which amounted in that period to $33,113,471 of raw sugar and $1,752,701 of refined. This trade in shipments of refined sugar from Hawaii to the United States is quite new and aggregated in the nine months of 1905, 33,136,858 pounds, while the record of the corresponding months of the preceding year shows no shipments of refined sugar from the islands to the United States. In the trade with Porto Rico the most important of the shipments to the United States is also sugar, which amounted to $13,040,802, out of a total of $16,108,406, the next largest item being cigars, $1,812,855, leaf tobacco, $392,651, sea island cotton, $146,730, and coffee, $98,827. From the Philippines the most important shipments to the United States were Manila hemp $9,522,857, and sugar, $2,216,240, against only $342,440 of sugar in the corresponding months of last year.

The shipments to these islands and to Alaska include practically all the articles of a general character which we export to other countries. To Alaska, for example, the shipments of the nine months included $541,511 worth of breadstuffs, of which flour was $248,571, oats $152,756, and preparations for table food $57,654. In addition to this there was $100,990 worth of bituminous coal, $134,846 worth of coffee, $285,112 worth of fruits and nuts, $2,251,130 worth of manufactures of iron and steel, of which $545,080 was tin plates for use in making cans for the shipment of salmon; also $1,444,034 worth of provisions, comprising meat and dairy products. Of the $8,880,630 worth of merchandise shipped from the United States to the Hawaiian Islands, $705,250 was cotton manufactures of various sorts, largely cotton cloths, $1,000,040 manufactures of iron and steel, practically $1,000,000 worth of mineral oil, of which the bulk was shipped out of the United States in the crude form, and about $500,000 worth of lumber and manufactures of wood. To Porto Rico the shipments of cotton manufactures to $1,745,060, of which $1,210,308 was in cotton cloths. Another important item in the shipments to Porto Rico was manufactures of iron and steel, which amounted in the nine months ending September, 1905, to $1,681,682, against $548,254 in the corresponding months of the preceding year. Still another important shipment from the United States to Porto Rico was rice of domestic production amounting in the nine months ending September, 1905, to $1,018,043, and in the corresponding months of the preceding year to $1,766,681. In addition to this, there was shipped to Porto Rico in the nine months ending September 1905, $1,188,542 worth of provisions, comprising meat and dairy products. In the shipments from the United States to the Philippine Islands in the nine months ending September, 1905, manufactures of iron and steel amounted to $707,406, provisions to $340,758, boots and shoes to $147,682, and cotton cloths to $407,250, against $286,015 in the corresponding months of the preceding year.

EXPORT IMPLEMENT AGE

POUR LA CIRCULATION À L'ÉTRANGER EXCLUSIVEMENT.

Journal indépendant exclusivement consacré aux intérêts du commerce d'exportation des machines agricoles, pompes, moulins à vent, outils de fermes, fournitures pour crèmeries et articles spèciaux de quincaillerie.

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Dans le Répertoire d'adresses à l'usage des acheteurs, dans la première partie de ce livre nous donnons les renseignements en français; nous avons recours à ce moyen afin de faciliter la correspondance avec les maisons qui font insérer des annonces dans ce journal.

On vient de construire le plus gros câble métallique dont on se soit jamais servi pour le halage. Il sera employé à Glasgow. Il a sept milles de long, 4 pouces 5 huitièmes de circonférence et pèse prés de 60 tonnes. Il est d'une seule pièce, et en acier fondu au creuset. Quand il sera posé, il formera un cercle complet autour de Glasgow, traversera la Clyde et filera à une vitesse de 15 milles à l'heure.

Un Américain vient de découvrir dans l'ile de Luzon, l'une des Philippines, un lis ou une tulipe à fleur noire d'un diamètre de huit à neuf pouces. La fleur s'épanouit avant l'apparition des feuilles, elle a une odeur de viande gâtée, qui attire les insectes, lesquels contribueront ainsi sans doute à la création de nouvelles variétés végétales. Cette plante a moins d'un pied de haut et croit sous l'ombrage d'une végétation luxuriante. Elle choque en nous l'idée que nous nous faisons de la pureté du lis et fait songer au vautour chez les oiseaux.

Afin d'éloigner le choléra, les jeunes femmes du village russe de Klimovsko, en vêtements de nuit, les cheveux dénoués, pieds nus, firent la ronde du village à minuit sonnant. L'une d'elles portant un petit fer à repasser, marchait en tête. Immédiatement derrière elle, une autre à cheval munie d'un râteau de four, portrait dans le creux de sa main du pain et du sel. A cinq pas derrière celle-ci suivaient douze jeunes filles tirant une charrue.

Vaisseau aérien au-dessus de New York

Pour la première fois les habitants de New York ont été témoins de'une démonstration pratique de navigation aérienne, donnée par le moyen du ballon dirigeable construit et manœuvre par M. A. Roy Knabenshue de Toledo é (Ohio) qui si rendit fameux en pilotant le vaisseau aérien "Arrow" à l'exposition de Saint-Louis, l'année dernière. Partant de son enclos dans un terrain inoccupé à l'ouest de Central Park, rue Soixante-deux, M. Knabenshue fit un vol d'essai jusqu'au Times Building, rue Quarante-deux et Broadway, et retour; mercredi il manœuvra au-dessus de Broadway, dans la direction du sud, jusqu'au Flatiron Building, et revint chaque fois au parc sans mésaventure. Une immense foule suivait avec interêt les péripéties de cette nouvelle expérience de navigation aérienne, d'autant plus captivante qu'elle avait un but commercial. Un journal de New York s'était servi de l'expérience pour faire de la réclame; il s'était arrangé avec l'aéronaute pour que celui-ci jetât tandis qu'il planerait au-dessus des rues et des toits, un certain nombre de chèques de valeurs diverses variant de 1 à 100 dollars. M. Knabenshue raconte qu'il a rencontré une remarquable série de courants qui se croisaient et qui faisaient songer à une mer houleuse dans une tempête. Il s'éleva jusqu'à 5,000 pieds, et à cette hauteur il pouvait entendre très distinctement la corne des automobiles et le gong des tramways circulant dans les rues au-dessous de lui.

La Question de la Monnaie

Les sommes d'argent que l'oncle Sam a dans ses caisses doivent être comptées chaque fois qu'il se produit un changement dans les bureaux du trésorier. Il y a huit ans quand l'Honorable Ellis H. Roberts devint trésorier, il y avait 800 millions de dollars dans le trésor. Il fallut huit mois à 50 experts pour compter cet argent. Soixante amployés du trésor sont en ce moment en train de compter le billon, l'argent de toute dénomination, jusqu'à l'obligation de 50,000 dollars, et l'on ne s'attend pas à ce que leur tâche soit achevée avant le premier mars 1906. Les femmes comptent les billets et les hommes l'or et l'argent. Une femme n'a pas perdu son temps si dans une journée de sept heures elle a pu manipuler 16,000 billets. Tout le papier-monnaie est mis en paquets. L'or et l'argent se comptent au poids. L'argent monnayé est mis dans des sacs en toile pouvant recevoir un poids de huit onces. Chaque sac contient 5,000 dollars en or et 1,000 dollars en argent. Il y a dans le trésor, à l'heure actuelle, 5,000 tonnes, dont 30,000 livres sont en or. Il coûtera 16,000 dollars au gouvernement pour compter 1,152,218,725 dollars. Evidemment, ce n'est point payer trop chèrement les hommes et les femmes qui font le travail, main ce n'en est pas moins du gaspillage, et cela montre que le gouvernement est un peu vieux jeu et n'a pas encore adopté les procédés pratiques, avancés, du monde des affaires.

Nouveau port Sud-Américain

Le port de Buenos Ayres, dans l'Amérique de Sud, n'étant pas assez profond pour permettre aux gros navires d'y pénétrer, M. Arturo Costana a obtenu une concession pour la construction d'un nouveau port dans la baie de Samborombone, à 50 milles plus près de l'Océan Atlantique, sur les bords de la Plata. Le projet prévoit une dépense d'environ 40 millions de dollars, dont la plus grande partie a été souscrite à Paris. C'est, dit-on, à une compagnie de Manchester (Angleterre) que les travaux de construction du port on, été adjugés et d'autres compagnies sont en train de se former pour la construction de canaux, de chemins de fer, de magasoins.

Forêts et Papier

Le papier fut fabriqué à la main jusqu'en 1800, époque à laquelle les fréres Fourdrinier inventèrent la machine à fabriquer le papier. Ce sont les frères Fourdrinier qui lui ont fait subir tous les perfectionnements désirables. La machine à papier de l'heure actuelle est telle qu'elle est sortie de leurs mains. Le papier s'obtient si facilement, il est produit à si bon marché, que son utilité sans toutes les branches de l'industrie n'est guère appréciée à sa juste valeur. Arrêtons-nous une minute pour songer à ce qu'il adviendrait si la production du papier était soudainement interrompue. Il y a aux Etats-Unis plusieurs journaux du dimanche qui consomment 100 tonnes de papier pour un seul tirage, ce qui represente quelque chose comme 125 "cords" (le "cord" égale 128 pieds cubes) et le déboisement de six acres de bois de sapin complètement développé.

Le *Record*, de Philadelphie, à fait faire une expérience ayant pour but de déterminer le temps nécessaire pour transformer un arbre en un journal imprimé, prêt à être mis en circulation.

Le *Record* possédant une fabrique de papier il lui était facile de faire l'expérience; on a trouvé qu'il fallait vingt-deux heures.

Prière de mentionner ce journal en ecrivant aux personnes qui y font insérer des annonces.

INTENTIONAL SECOND EXPOSURE

La demande de l'acier

Parlant tout dernièrement de l'état du commerce de l'acier, M. Charles M. Schwab disait:

"Je crois que la demande de l'acier va être continue et considérable. L'Espagne a résolu de reconstruire sa marine. La Russie doit en faire autant. Les Etats-Unis, l'Angleterre, l'Allemagne, toutes les nations pour ainsi dire, se sont prononcées en faveur de constructions navales qui vont nécessiter, pendant des années, une grande consommation d'acier. Le programme naval de la Russie comporte d'actives constructions qui devront durer plus de quinze années. Il faudra à l'Espagne autant d'années; aux Etats-Unis, autant; à l'Angleterre, autant; autant à la France, à quelques pays de l'Amérique du Sud, au Japon, à la Chine, à d'autres pays encore qui consommeront moins d'acier sans doute, mais en consommeront pourtant beaucoup.

"Et l'activité des constructions navales ne s'arrêtera pas là. Les gros navires ne peuvent aller sans vaisseaux auxiliaries: une marine, aujourd'hui, est une machine dont les pièces accessoires s'appellent bâtiments de réparations, navires hopitaux, bâtiments charbonniers, transports, d'autres petits bateaux de types divers. Tous ces vaisseaux sont nécessaires, non pour faire la guerre, mais pour prévenir la guerre et pour être prêt à la guerre si elle vient à éclater. M. Roosevelt a raison, et son opinion a été appuyée par celle de l'empereur d'Allemagne dans l'espace de quelques semaines, et tous les commandants d'armées de terre ou de mer l'appuyeraient de même."

M. Schwab croit que le prochain Congrès votera quelques lois visant à encourager la construction d'une marine marchande américaine. Il croit que si nos commerçants veulent occuper une place prépondérante dans les marchés du monde, il faut qu'il y ait une marine portant le drapeau américain et que ceci donnera à notre pays, dans les ports étrangers, le prestige qui s'attache à la protection de notre drapeau. Il croit que les chemins de fer commencent à peine à entrevoir la nécessité d'une reconstruction totale; que l'empierrement des lignes de chemins de fer doit être plus profond et plus ferme, qu'il faut construire un plus grand nombre de voies ferrées, des machines motrices et un matériel roulant meilleurs et plus solides.

Il croit qu'il y a de grandes améliorations publiques et privées qui vont se faire dans le pays dans les dix ou vingt prochaines années et qui demanderont de plus en plus d'acier. Cette idée est fondée en partie sur le prix croissant du bois et l'indestructibilité de l'acier par le feu. Il croit que l'acier entrera davantage encore dans la construction des maisons d'habitation et des bâtiments pour bureaux d'affaires dans les villes, afin d'éviter les pertes effrayantes que les incendies occasionnent, et qui dévorent actuellement les économies et la richesse des gens et imposent lourdement le commerce et l'industrie.

Réclame vingtième siècle

Une maison entreprenante de quincaillerie et d'outils agricoles, une maison de l'ouest cela va sans dire, imagina récemment un moyen de réclame unique qui eut un succès phénoménal et qui réussit à la fois à amuser la foule et à augmenter les recettes de la compagnie. Cette compagnie donc envoya à tous les fermiers des alentours, quelques semaines avant l'événement, une circulaire offrant un prix de 10 dollars en or à la personne qui, un certain samedi, amènerait dans l'endroit sur un véhicule de n'importe quelle description, le plus grand nombre de personnes. Les seules conditions à remplir étaient d'arriver avant midi et de déposer la charge humaine devant les magasins même de la compagnie dont un employé compterait les arrivants.

On voit sans peine à quoi cela visait. Certaine de récolter les avantages qui résultent de la distribution de prospectus, la compagnie ne pouvait rien perdre de ce côté. Mais il s'agissait de voir si les gens de la campagne mordraient à l'appât des dix dollars.

Que presque tous les fermiers non seulement mordirent à l'appât, mais firent de leur mieux pour avaler appât, hameçon, bouchon et le reste, fut amplement démontré par l'événement. Au jour fixé de toutes les directions et par toutes les routes, on vit arriver des véhicules de toutes descriptions et de tous rangs, quelques-uns tirés par de bêtes de somme de l'espèce bovine, mais attelés pour la plupart de chevaux splendides, et tous bondés d'hommes, de femmes et d'enfants.

Jamais depuis que le "gigantesque assemblage doiseaux et de bêtes rares des hémisphères habitables et inhabitables" de John Robinson avait fait son apparition dans l'endroit, on n'avait vu pareille foule de gens des campagnes dans les rues.

Ils commencèrent à arriver peu après le lever du soleil, et la procession continua jusqu'à près de midi. Avec chaque véhicule qui arrivait et déposait ses occupants devant l'établissement, la foule des badauds augmentait aussi bien que celle des concurrents.

Jusqu'à dix heures, le nombre des personnes apportées par chaque concurrent varia de 20 à 50, mais à ce moment-là un homme arriva avec 51 voyageurs. Il crut qu'il avait le prix, lorsqu'à 11 heures moins vingt apparut un autre fermier avec une charrette de 50 pieds de long, contenant 86 personnes. Ce chiffre était si supérieur à celui des autres compétiteurs et il était alors si près de midi qu'il s'imigina qu'il ne pouvait perdre.

"Tu as le prix," lui dit un de ceux qu'il venait de débarquer.

"Ca serait un peu fort si je l'avais pas" dit-il en mettant ses mains dans ses poches et en s'éloignant. Il entendait déjà les pièces sonner dans ses poches. Sa confiance était si absolue qu'il s'acheta un chapeau neuf et une cravate neuve, puis, se rendant chez un coiffeur, il se fit raiser, couper les cheveux, fit cirer ses souliers (il y a des décrotteurs chez les perruquiers en Amérique), le tout sur la foi absolue qu'il avait gagné les 10 dollars.

Mais à peine sortait-il de chez le barbier que la foule poussa un grand cri quand elle vit s'avancer un véhicule dont on n'avait jamais vu le pareil dans les rues de cette ville et dont on ne reverra probablement plus jamais le pareil.

Le véhicule avait 85 pieds de long et 20 de large. Il était monté sur huit roues et attelé de huit chevaux. Assis sur le bâti allongé il y avait assez d'hommes, de femmes, de garçons et de filles pour jeter les fondements d'une colonie dans l'Oklahoma ou s'établir sur un terrain reservé dans le Dakota.

L'homme qui tenait les rênes et conduisait les huit chevaux avec la dextrité d'un cocher de cirque, était d'un village de trois maisons et de trente personnes, à 15 milles de là. Il tourna le coin, suivi d'une foule qui l'applaudissait, et fièrement stoppa ses huit coursiers à la place voulue, où furent comptées unités de la délirante charge humaine; il ye en avait 110.

On veille au confort de l'oreille du public en Belgique. A Vervière, les joueurs d'orgues de Barbarie sont tenus de se présenter chaque matin devant le surintendant de la police et de jouer de leurs instruments. Les orgues qui ne sont pas d'accord doivent être accordées avant que leurs propriétaires puissent obtenir un permis de jouer dans les rues.

Sommes fabulenses dépensees en pourboires.

Un diligent statisticien français s'est livré à de patientes et méticuleuses recherches pour déterminer les sommes qui se dépensent annuellement en France en pourboires aux garçons de cafés, de restaurants, d'hôtels, aux cochers, aux ouvreuses de théâtre, aux concierges, etc. Les sommes ainsi dépensées s'élèvent à près d'un demi-milliard de francs, soit, en monnaie américaine 100 millions de dollars. A Paris seul, près de 60,000 dollars se dépensent journellement de cette façon. Le statisticien dit que cela constitue, pour chaque Parisien, un impôt journalier de sept centimes, et quand nous disons chaque Parisien il faut entendre tous les habitants de Paris sans exception, aussi bien ceux qui n'ont point l'occasion de donner de pourboire, que les autres qui passent une bonne partie de leur temps dans les cafés. La somme annuelle des pourboires donnés à Paris s'élève à environ 100 millions de francs. Dans la province elle atteint 372 millions de francs ce qui représente un impôt journalier de trois centimes pour chaque personne habitant les départments. Le statisticien assure que ses chiffres sont aussi près que possible de la vérité. On ne saurait nier que le système du pourboire soit fortement implanté sur le sol français, et rien ne fait prévoir qu'il soit aboli de si tôt, en dépit des campagnes périodiques organisées contre lui.

La. plus grande foré de pin la à sucre du globe commence à Klamath, et, se dirigeant vers le nord, dépasse les pics éclatans de Mount Pitt, de Diamond, de Thielson, de Scott et des Three Sisters, pour venir aboutir au pied même du Jefferson, à 200 milles au nord. C'est un vaste empire forestier sur lequel règnent les créatures sauvages des bois profonds. Il embrasse une superficie de plus de 4,000 milles carrés. Il est donc aussi vaste que l'état tout entier du Connecticut, ou que la moitié de l'état de Massachusetts, et trois fois aussi grand que l'état de Rhode Island. L'oncle Sam étend sa main protectrice sur cinq cents milles carrés de cet empire, et une armée d'actifs gardes-forestiers les parcourt dans tous les sens pendant les grandes chaleurs de l'été.

Depuis 1890, époque à laquelle l'archipel japonais n'exportait que 20,000 tonnes de charbon, la production du "diamant noir" dans l'archipel a augmenté de 67 pour cent. Treize millions de tonnes sont sorties des mines l'année dernière, dont 3 millions ont été exportées.

L'exposition universelle de Chicago

Après un travail méticuleux et fastidieux de douze années, les fonctionnaires de l'exposition universelle de Chicago ont enfin réussi à boucler les affaires de la grande exposition. Le président de la compagnie, M. Harlow N. Higinbotham et son secrétaire, M. H. O. Edmonds, doivent toutefois conserver leurs fonctions, car la compagnie possède encore 20,000 dollars, appartenant à des actionnaires qu'on ne peut trouver.

Des 5,500,000 dollars souscrits pour les besoins de l'exposition, 14½ pour cent sont rentrés dans le portefeuille des actionnaires. Comme la plupart de ceux-ci considéraient l'argent comme donné dans l'intêret de Chiago, ils ne comptaient pas recevoir quoi que se soit.

Lors de la première distribution de fonds, en juin 1894, M. Edmonds se vit dans l'obligation de trouver 20,000 actionnaires, dont bon nombre n'étaient plus à Chicago. Le capital de 5,500,000 dollars fut divisé en actions de 10 dollars chacune. Six mille personnes ne possédaient qu'une action, et le reste du capital était divisé en lots comprenant de deux à 100 actions.

En juin 1894, 55,000 dollars furent distribués aux actionnaires, et les dettes de la compagnie furent payées. LaL seconde distribution, qui était de 4¼ pour cent. fut faite en mars 1904.

C'est avec cette dernière distribution que commencèrent les difficultés réelles. Un grand nombre des chèques expédiés à de nouvelles adresses revinrent accompagnés d'autres adresses. Ces chèques furent ré-éxpidiés, et l'on découvrit des actionnaires dans toutes les parties du globe, depuis l'Alaska jusqu'à l'Australie.

Un homme que le secrétaire, M. Edmonds, recherchait depuis dix années, se présenta à la Northern Trust Bank et reclama 1 dollar 47 qu'on lui devait sur une action. D'autres actionnaires se présentent à la banque jour après jour.

"L'argent est placé à intérêt dit M. Edmonds, et s'il y reste assez longtemps il rapportera une assez jolie somme que l'on pourrait consacrer à quelque œuvre charitable."

Outre les 20,000 dollars de surplus, il y a encore un fonds qui est tenu en réserve par la compagnie de l'exposition pour parer aux frais de jugements possibles de procès non encore décidés. Si les tribunaux donnent raison aux défendants, le surplus sera donné à des ouvres de charité locales.

Edison, le Pacifique

Le *Sun* de New York, du dimanche 14 mai, contenait un article de quatre colonnes ayant pour titre: "Edison le pacifique." Cet article est le résultat d'une interview avec l'illustre inventeur.

Interrogé sur les progrès de ses travaux sur sa batterie secondaire, M. Edison répondit: "Ce que je cherche à présent c'est à obtenir qu'une automobile à tonneau pour quatre personnes puisse faire 100 milles sans qu'on ait besoin de recharger les piles. Cela est aujourd'hui possible avec des trucks lourds, mais les batteries sont trop lourdes pour l'automobile. LaL limite pratique pour le tonneau est, à l'heure actuelle, de 50 milles.

"On me demande souvent à quoi je travaille et combien il me faut de temps pour achever une invention. Voilà deux questions auxquelles il n'est pas facile de répondre. Je travaille aujourd hui encore à des choses que j'ai commencées il y a quinze ans et qui sont encore inachevées. Quelques-unes se vendent aujourd'hui, mais je travaille à les perfectionner; mais il en est d'autres dont le public ne sait pas le moindre mot. Il y a quatre années que je travaille à cette batterie secondaire. J'ai travaillé incessament, pendant huit années, à la lampe à incandescence, et il y a trente-cinq ans que je travaille au phonographe, et, à l'heure actuelle, une bonne partie de mon temps est consacré au perfectionnement de cet appareil." En réponse à d'autres questions, M. Edison s'exprima de la façon suivante: "LeL plus long intervalle de temps que j'aie jamais travaillé a été de cinq jours et cinq nuits, sans interruption, sans sommeil. C'était au cours des expériences d'éclairage. Une autre fois j'ai travaillé quatre jours et quatre nuits de suite; c'était au moment de l'inauguration de Pearl Street Station. Nous ne savions ce qui allait arriver; nous craignions que quelque chose ne fit explosion quand on lancerait le courant. Tout le monde prédisait un échec. Cependant, quand nous fimes passer le courant, tout marcha à souhait et le courant a passé pendant huit années. L'Insomnie? Cela me fait rire quand j'entends parler les gens d'insomnie. Un jour un homme vint me voir; il ne pouvait pas dormir, il avait des insomnies, il était fort inquiet. Je lui dis: je vais vous guérir. Je le mis à travailler à une pompe à mercure, je le tins à son travail, je lui dis qu'il devait le finir a un certain moment fixé, et comme il ne pouvait pas dormir, il n'avait pas d'excuse pour s'arrêter. Au bout du troisième jour, nous trouvâmes la pompe brisée en mille morceaux et la victime de l'insomnie profondément endormie sur les débris. Le sommeil n'est qu'une affaire d'hérédité! si le soleil brillait sans cesse, les gens ne tarderaient pas à se déshabituer du sommeil."

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LaI. corriente del Golfo se dice que ha cambiado su curso, corriendo ahora mucho más cerca de nuestras costas del Atlántico que antes. Se cree que ese cambio es debido á los vientos del Sur y del Sudeste, que tan continuamente han estado soplando. Hasta cierto punto la proximidad de esa tibia corriente del Oceano es la causa de la excesiva humedad que ha reinado este verano en Nueva York y las demás ciudades del Norte.

Los Canales y la Agricultura

El Consul de los Estados Unidos Frank W. Mahin, en su informe enviado desde Nottingham, Inglaterra, dice que el alto tipo de los fletes locales, la decadencia de la agricultura, el entorpecimiento del comercio, y otras causas análogas de descontento con las condiciones actuales han llamado en los meses recientes la atención sobre el sistema de canalización, que comprende un total de 3,907 millas en el Reino Unido. Casi una tercera parte de esos canales son propiedad de las compañias ferro-carrileras, lo que materialmente disminuye su valor como factores de competición en el negocio de fletes ó transporte de mercancias. La última proposición es que pasen los canales á ser propiedad del Estado, y se introduzca en ellos la fuerza motriz eléctrica para sus navegción. Según los datos oficiales el ingreso anual de esos canales asciende á unos $12,000,000, y el costo de mantención y explotación á unos $8.500,000, dejando aparentemente una buena utilidad. Un ingeniero civil distinguido que ha estudiado atentamente el asunto sugiere que se conceda al Estado un crédito de £20.000,000 (unos $100.-000,000) para comprar, perfeccionar y electrificar los canales, en cuya suma se incluye un fondo reservado de $15.000,000 como capital de explotación. El ingeniero se extiende sobre los diferentes beneficios y ventajas que se obtendrán adoptando semejante plan, observando particularmente que la introducción de la fuerza eléctrica generada por los mismos proporcionaría un servicio de transportes barato, y que las misma fuerza eléctrica podría servir para hacer funcionar las bombas para el regadio, para arar, hacer mantequilla y moler; en una palabra, que la revivificación de las vías de agua en el interior del pais contribuiria en gran manera al fomento de la prosperidad agrícola.

Un Nuevo Puerto Sud Americano

Siendo demasiado bajo el puerto de Buenos Aires, República Argentina, para dar cabida á los más grandes vapores transatlánticos, ha obtenido una concesión Arturo Castana para construir un nuevo puerto en la bahía de Samborombone, á 50 millas de Oceano Atlántico y á lo largo del rio de la Plata. El plan requiere un gasto de $40.000,000, y la mayor parte de esta suma se ha subscrito en Paris. El contrato para la construcción de dicho puerto se le ha concedido á una casa de Manchester, Inglaterra, y se están organizando otras compañias para construir, canales, ferrocarriles y almacenes.

Alimentos y Bebidas

Durante el año fiscal que terminó el 30 de Junio de 1904 obtuvo el Gobierno una entrada de $184,893,474 producida por el impuesto sobre los licores espirituosos y la cerveza. Esa suma representa un impuesto de $2.26 sobre cada hombre, mujer y niño de los Estados Unidos, ó $11.30 por cada familia. El desembolso anual para estimulantes, incluyendo el café, el té y el cacao, asi como los licores embriagantes es de $1,350,000,000, más de 85 por ciento de los cuales se gasta en licores embriagantes.

Según los informes de la Oficina de Estadisticas del Departamento de Comercio y Trabajo de los Estados Unidos, ha habido durante los últimos diez años un aumento constante en el consumo de vinos y licores espirituosos del país. El aumento en el consumo de vinos ha sido de un 100 por ciento; en el de "whiskey" 46 por ciento; y en el de cerveza 18 por ciento. Aunque el aumento en ese consumo ha sido notable, esos cálculos no prueban que haya aumentado la embriaguez en la nación, pues su población ha aumentado en la misma proporción. Ni tienen razón los prohibicionistas al asegurar que una octava parte de [illegible] que paga el pueblo por sus comestibles y bebidas inocentes se gasta en estimulantes. El Comisionado de la Oficina de Trabajo de los Estados Unidos, Mr. Wright, calcula que la entrada anual por termino medio de cada familia de esta nación asciende á $827.19. La misma autoridad demuestra que cada familia tiene que gastar $768.54 de esa cantidad para cubrir las necesidades de la vida; que de esta cantidad $327.10 se van en alimentos ó comestibles, y el resto en alquiler de casa, interés, seguro, ropa, etc. Con esto se refuta la aserción de que una octava parte de lo que cuesta la alimentación y bebidas inocentes se gasta en estimulantes. A la verdad, Mr. Wright considera separadamente lo que se paga por licores embriagantes al año por cada familia, y el promedio no pasa de $12.45, y esta cantidad no entra en lo que se gasta para la alimentación.

El aserto que la clase trabajadora (jornaleros) es la que sostiene el comercio en licores es erroneo. En un solo dia gasta más un hombre rico en licores para si, su familia y sus amigos que un jornalero en un año. Esto prueba que la pobreza de las masas del pueblo del país no se puede atribuir al uso inmoderado de licores embriagantes.

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Billetes de bancos nacionales están hoy en circulación por valor de $500.000,000. El aumento durante unos siete años ha sido de 110 por ciento. Sólo en los últimos nueve meses se han añadido $46.000.000 á esa circulación. LoLs recursos bancarios del país casi han doblado.

Silicio, el metal más abundante del mundo, pero que hasta aqui es poco conocido por la dificultad de separarlo del oxigeno, se puede obtener en suficientes cantidades para satisfacer cualquier demanda del hornillo eléctrico, que le comunica al acero valiosas propiedades eléctricas, y se espera que adquiera gran importancia para las ligas del hierro.

LaL corriente del Golfo se dice que ha cambiado su curso, corriendo ahora mucho más cerca de nuestras costas del Atlántico que antes. Se cree que ese cambio es debido á los vientos del Sur y del Sudeste, que tan continuamente han estado soplando. Hasta cierto punto la proximidad de esa tibia corriente del Oceano es la causa de la excesiva humedad que ha reinado este verano en Nueva York y las demás ciudades del Norte.

Los Canales y la Agricultura

El Consul de los Estados Unidos Frank W. Mahin, en su informe enviado desde Nottingham, Inglaterra, dice que el alto tipo de los fletes locales, la decadencia de la agricultura, el entorpecimiento del comercio, y otras causas análogas de descontento con las condiciones actuales han llamado en los meses recientes la atención sobre el sistema de canalización, que comprende un total de 3,907 millas en el Reino Unido. Casi una tercera parte de esos canales son propiedad de las compañías ferro-carrileras, lo que materialmente disminuye su valor como factores de competición en el negocio de fletes ó transporte de mercancias. La última proposición es que pasen los canales á ser propiedad del Estado, y se introduzca en ellos la fuerza motriz eléctrica para sus navegción. Según los datos oficiales el ingreso anual de esos canales asciende á unos $12,000,000, y el costo de mantención y explotación á unos $8.500,000, dejando aparentemente una buena utilidad. Un ingeniero civil distinguido que ha estudiado atentamente el asunto sugiere que se conceda al Estado un crédito de £20.000,000 (unos $100.000,000) para comprar, perfeccionar y electrificar los canales, en cuya suma se incluye un fondo reservado de $15.000,000 como capital de explotación. El ingeniero se extiende sobre los diferentes beneficios y ventajas que se obtendrán adoptando semejante plan, observando particularmente que la introducción de la fuerza eléctrica generada por los mismos proporcionaría un servicio de transportes barato, y que las misma fuerza eléctrica podría servir para hacer funcionar las bombas para el regadio, para arar, hacer mantequilla y moler; en una palabra, que la revivificación de las vías de agua en el interior del país contribuiria en gran manera al fomento de la prosperidad agrícola.

Un Nuevo Puerto Sud Americano

Siendo demasiado bajo el puerto de Buenos Aires, República Argentina, para dar cabida á los más grandes vapores transatlánticos, ha obtenido una concesión Arturo Castana para construir un nuevo puerto en la bahía de Samborombone, á 50 millas de Oceano Atlántico y á lo largo del rio de la Plata. El plan requiere un gasto de $40.000,000, y la mayor parte de esta suma se ha subscrito en Paris. El contrato para la construcción de dicho puerto se le ha concedido á una casa de Manchester, Inglaterra, y se están organizando otras compañías para construir, canales, ferrocarriles y almacenes.

Alimentos y Bebidas

Durante el año fiscal que terminó el 30 de Junio de 1904 obtuvo el Gobierno una entrada de $184.893,474 producida por el impuesto sobre los licores espirituosos y la cerveza. Esa suma representa un impuesto de $2.26 sobre cada hombre, mujer y niño de los Estados Unidos, ó $11.30 por cada familia. El desembolso anual para estimulantes, incluyendo el café, el té y el cacao, asi como los licores embriagantes es de $1,350.000,000, más de 85 por ciento de los cuales se gasta en licores embriagantes.

Según los informes de la Oficina de Estadísticas del Departamento de Comercio y Trabajo de los Estados Unidos, ha habido durante los últimos diez años un aumento constante en el consumo de vinos y licores espirituosos del país. El aumento en el consumo de vinos ha sido de un 100 por ciento; en el de "whiskey" 46 por ciento; y en el de cerveza 18 por ciento. Aunque el aumento en ese consumo ha sido notable, esos cálculos no prueban que haya aumentado la embriaguez en la nación, pues su población ha aumentado en la misma proporción. Ni tienen razón los prohibicionistas al asegurar que una octava parte de [illegible] que paga el pueblo por sus comestibles y bebidas inocentes se gasta en estimulantes. El Comisionado de la Oficina de Trabajo de los Estados Unidos, Mr. Wright, calcula que la entrada anual por termino medio de cada familia de esta nación asciende á $827.19. La misma autoridad demuestra que cada familia tiene que gastar $768.54 de esa cantidad para cubrir las necesidades de la vida; que de esta cantidad $327.10 se van en alimentos ó comestibles, y el resto en alquiler de casa, interés, seguro, ropa, etc. Con esto se refuta la aserción de que una octava parte de lo que cuesta la alimentación y bebidas inocentes se gasta en estimulantes. A la verdad, Mr. Wright considera separadamente lo que se paga por licores embriagantes al año por cada familia, y el promedio no pasa de $12.45, y esta cantidad no entra en lo que se gasta para la alimentación.

El aserto que la clase trabajadora (jornaleros) es la que sostiene el comercio en licores es erroneo. En un solo día gasta más un hombre rico en licores para sí, su familia y sus amigos que un jornalero en un año. Esto prueba que la pobreza de las masas del pueblo del pais no se puede atribuir al uso inmoderado de licores embriagantes.

INTENTIONAL SECOND EXPOSURE

La Exposición Universal de Chicago

Después de doce años de tediosos y asiduos trabajos han logrado los empleados oficiales de la Exposición Universal del Centenario Colombino ajustar definitivamente los negocios de esa gran Exposición Universal. El Presidente Harlow N. Higinbotham y el Secretario Mr. H. O. Edmonds tienen que quedar, sin embargo, como funcionarios de la Compañia del Centenario, pues tienen todavia entre manos unos $20,000 pertenecientes á accionistas que no pueden hallar.

De los $5.500,000 suscritos para la Exposición 14½ per cent. se ha re embolsado á los accionistas ó subscritores. Como la mayor parte de los tenedores de esas acciones consideraban el dinero que contribuian como una dádiva en beneficio de los intereses de Chicago, no esperaban recibir nada por ellas.

Cuando se hizo la primera repartición de fondos en Junio de 1894, Mr. Edmonds tuvo que hacer frente á la ardua tarea de buscar á cerca de 20,000 accionistas, muchos de los cuales se habian ido de Chicago. Los $5.500,000 se dividieron en acciones de $10 cada una. Unas 6,000 personas tenian una eción cada una, y el resto del capital se divideron en lotes de dos á 100 acciones cada uno.

En Junio de 1894 se distribuyeron 55,000 entre los accionistas y se pagaron las deudas de la Compañia. La segunda repartición, que fué de 4½ per cent., se efectuó en Marzo de 1904.

Fué cuando se empezó á hacer esta segunda repartición que principiaron las verdaderas dificultades. Muchos de los cheques remitidos por el correo á nuevas direcciones fueron devueltos con otras direcciones marcadas. Estos fueron enviado de nuevo por el correo, habiéndose hallado á los accionistas en todas partes del mundo, desde Alaska hasta la Australia.

Un hombre á quien el Secretaria Edmonds habia buscando por diez años apareció ante el Northern Trust Bank, reclamando $1.47 que se le debia como la prorata correspondiente á su acción. Otros se presentan dia tras dia al banco, reclamando su cuota.

"El dinero está depositado y devengando intereés, y si permanece depositado por mucho tiempo, llegará á ser una bonita suma para alguna institución caritativa merecedora en años venideros." Tal es la sugestión de Mr. Edmonds.

Además del sobrante de $20,000, se tiene un fondo de reserva por la Compañia de la Exposición para atender á las sentencias posibles en ciertos juicios ó litigios juridicos todavia pendientes. En caso que los tribunales decidan esos litigios en favor de la Compañia, se dedicará esa suma reservada á obras de caridad.

La Navegación Aerea en Nueva York

Por primera vez han presenciado los habitantes de Nueva York una demonstración práctica de la navegación aerea por medio del globo dirigible construido y dirigido por Mr. A. Roy Knabenshue, de Toledo, Ohio, que se hizo famoso navegando el barco aereo "Arrow" en la Exosición Universal de San Luis el año pasado. Partiendo del cercado de un solar vacante al oeste del Parque Central en la calle 62, Mr. Knabenshue, hizo un ensayo de volar hasta el edificio del *Times*, en la calle 42, y Broadway, y volver, y el Miércoles emprendió su vuelo sobre Broadway hacia el sur hasta el edificio "Flatiron," regresando cada vez al Parque sin el menor contratiempo. Un gentio inmenso siguió con la vista el curso del novel experimento que ofreció una causa adicional de excitación, su objeto comercial. Un periódico de la localidad hizo uso del experimento, haciendo que el aereonauta arrojase desde lo alto á medida que navegaba sobre y á lo largo de Broadway cierto número de cheques de diferentes valores, desde $1.00 hasta $100.00. Escribiendo sobre su experimento dice Mr. Knabenshue que encontró una serie de corrientes cruzadas que le sugirieron la idea de un mar picado en una tormenta. El subió hasta la altura máxima de 5,000 pies, desde cuyo punto podia oir la corneta de los automóviles, y los tañidos de las campana de los carros de los tranvias eléctricos en las calles.

Selvas Para Papel

El papel se fabricó á mano hasta el año de 1,800, cuando los hermanos Fourtrinier inventaron la máquina de hacer papel. Esa máquina ha llegado á su presente desarrollo desde las manos de los inventores originales. El papel se obtiene hoy tan fácilmente y se produce con tan poco costo, que no se estima lo bastante en ningún ramo de la industria. Podriamos deteneros á pensar por un minuto lo que sucederia si cesase la producción de papel. Hay publicados en los Estados Unidos un gran número de periódicos dominicales que consumen unas cien toneladas de papel en la impresión de un solo número, para fabricar el cual papel se requieren 125 cuerdas de palo y el desmonte de seis acres bien espesamente cubiertos con una selva de pinabete.

El *Record* de Filadelfia hizo llevar á cabo una prueba sobre el tiempo requerido para convertir un árbol en papel de imprenta hasta alistarlo para la circulación.

El *Record* tiene una fábrica de papel, y pudo hacer esa prueba, que dió por resultado veinte y dos horas.

Millones Dados en Propinas

Un diligente estadistico francés se ha ocupado muy asiduamente en computar la cantidad de dinero dada en Francia en propinas ó gratificaciones anualmente á los mozos de café, y hotel, cocheros, abridores de palco en los teatros, conserjes ó porteros y otros. El dinero asi desembolsado asciende á 500,000,000 de francos ($100,000,000) al año. Sólo en Paris cerca de $60,000 se da en propinas cada día. El experto estadistico dice que esto equivale á una contribución de siete céntimos diarios por cada habitante de París, aplicando la gran suma mencionada á toda su población, incluyendo aun aquellos que no pueden ó no tienen que dar una propina, asi como los demás que pasan una gran parte de su tiempo en los cafées. La suma total distribuida en propinas en Paris cada año se eleva á unos $100.000,000 de francos. En las provincias llega la suma á 372.000,000 francos al año, lo que significa una contribución de 3 céntimos diarios por cada francés que vive en los departamentos. El computador asegura que estos datos estadísticos son tan aproximados a la exactitud como es posible. LaI. costumbre ó sistema de dar florece indudablemente en Francia, y no hay señales de que se acerque ed dia de su abolición, á pesar de las campañas periodisticas organizadas contra semejante sistema.

La floresta de pinos de azúcar más grande del globo empieza desde ed Klamath y se extiende hacia el norte, pasando por los relucientes picos de las Montañas Pitt, Diamond Thielson, Scott and Three Sisters, hasta el pié de Jefferson, 200 millas al norte. Es un vasto imperio selvático dominado por los seres salvajes de sus profundidades. Cubre un territorio de más de 4,000 millas cuadradas. Imagínese una selva tan vasta como todo el Estado de Connecticut, una mitad tan grande como el de Massachusetts y tres veces tan vasto como el de Rhode Island. Quinientas millas cuadradas de ese vasto territorio selvático están protegidas por el Tío Tomás (Estados Unidos). Un ejército de guardabosques rondan vigilando todos sus distritos durante los meses del verano.

El Americano Futuro

Según Mr. Luther Burbank, el criador de plantas y flores, el americano del porvenir será un tipo mejorado de la raza humana. Dice Mr. Burbank:

En mis trabajos con las plantas y flores introduzco, aqui un color, alli una forma, un tamaño ó un perfume, según el producto que deseo. En semejantes procedimientos me guía la enseñanza de la naturaleza. Sólo sus fuerzas mayores empleo. Todo lo que se ha hecho por las plantas y las flores ha hecho ya la naturaleza por el pueblo americano. Con el cruzamiento de sangre se ha conseguido en un caso la fortaleza, en otro la intelectualidad y en otro la fuerza moral. Sólo la naturaleza puede hacer esto. No se podria ordenar á la inteligencia y la mano del hombre que prescribiesen el desarrollo de una raza. Un cruzamiento de sangres concebido y dispuesto de antemano no tiene lugar en la formación de naciones y de pueblos. Pero cuando la naturaleza ha aplicado ya sus leyes, todo lo que queda que hacer es obra del medio ambiente.

El hombre no ha llegado aún á su desarrollo final. LoL más apto no ha sobrevivido aún. En el procedimiento de eliminación lo más debil tiene que sucumbir. Lo más apto del porvenir no es la más apto del pasado. Con la debida crianza y educación del niño se producirá por evolución una raza moralmente bella é intelectualmente apta. Yo no creo que el hombre de hoy ha llegado á lo más grande que hay en él. Tenemos lo que popularmente se llama los cinco sentidos; pero hay hombres de fuerza mental cuyo raciocinio muy raras veces ha errado y cuyos métodos son estrictamente cientificos que demuestran la posibilidad de desarrollar un sexto sentido. ¿Quien es el que puede decir con razón que no se desarrollarán en el hombre nuevos sentidos á medida que avanza el curso de su evolución? La sicologia se estudia hoy en las escuelas públicas de todo este país, y ese estudio conducirá á nuevos conocimientos del pensamiento psíquico. El hombre de las edades futuras puede llegar á ser de un order diferente al del hombre actual. Tal vez nos considerarán como consideremos nosotros los de hoy á nuestros más remotos progenitores.

Algunas veces me aterro cuando leo en los periódicos sobre el aumento de la demencia, de los suicidios, de los asesinatos y de los males fisicos del hombre. Las estadísticas nos ensenan muchas cosas que nos hacen pensar; pero á pesar de todo el punto de vista verdadero es el del optimista. Tiempo vendrá en que se disminuyan la demencia, los suicidios, los asesinatos, y los males y padecimientos corporales. Donde quiera que se encuentre una nación en que no haya variación habrá comparativamente poca demencia, ó crimen ó moralidad exaltada. Aqui en América, donde existe la mayor variación nos muestra la estadistica mayor proporción de demencia y de todas las demás variaciones. A medida que corre el tiempo en su interminable é incesante curso, se irá cristalizando el medio ambiente de la nación americana, se unificarán sus variables elementos y el procedimiento eliminativo dejará el mejor producto humano jamás conocido. El color, el perfume, el tamaño y la forma manumitidos en las plantas tendrán su contraparte en la combinación del americano del porvenir.

Y ahora ¿que es lo que más puede apresurar ese desaollo? La debida crianza de los niños. No se alimente al niño con una religión dogmática; désele la naturaleza. Beba sus alma todo lo que es puro y dulce. Críesele en una atmósfera agradable. Si viene al mundo siguiendo á tientas en la oscuridad su camino, déjesele ver y sentir la luz. No se le aterre en sus primeros años con el temor de otra vida. Jamás ha hecho bueno y noble á un niño el temor de un infierno. Déjesele á la naturaleza darle las lecciones de una vida buena y justa, combinadas con una nutrición bien equilibrada. Ese niño será el mejor hombre y la mejor de las mujeres la niña. Infúndasele lo mejor poniéndolo en contacto con lo mejor que hay en el mundo. Él ó ella lo absorberán del mismo modo que absorbe una planta la luz del sol y el rocío.

Carretos de Pasajeros

D. F. Sargent & Son, de Genesco, Ill., U. S. A., fabricantes de carretos de dos ruedas para pasajeros para la exportación están haciendo trabajar dia y noche á los operarios de su fábrica para poder despachar con prontitud los numerosos pedidos que están recibiendo. Una consignación de cuatro vagones cargados se está enviando á Sud América, y otra al Africa del Sur.

Por medio de botes con fondo de vidrio se ha descubierto, según el periódico *News* de Indianapolis, que el fondo de la bahia de Monterey, Cal., es una hermosa florest a submarina de naranjas de mar, lintas verdes, colas de caballo, pompones de mar, etc. Algunas de las plantas tienen una altura de 30 pies.

Estado de la Deuda Pública

El informe mensual de la deuda pública de esta nación manifiesta que al terminar el dia hábil del 31 de Agosto de 1905, ascendia, sin contar el efectivo en la Tesoreria, á la suma de $1,005.524,505, un aumento comparado con el último mes de $3.745.594. Esto se explica con la correspondiente diminución del dinero efectivo disponible.

La deuda se recapitula del modo siguiente:

Deuda sujeta á interés, $895.158,700.

Deuda cuyo interés ha cesado desde su vencimiento, $1.256.535.

Deuda no grabada con interés, $386.706,704.

Total, $1,283.121,939.

El dinero efectivo en la Tesoreria se clasifica come sigue:

Reserva de oro, $150.000,000.

Fondos de fideicomiso, $1,002.921,969.

Fondo general, $153.769,351.

En depositorios de bancos nacionales, $64.059,171.

En la Tesoreria de las Filipinas, $4.489,951.

Total, $1,375.240,443, contra cuya cantidad hay deudas pasivas ascendentes á $1,097.643,099, dejando una cantidad efectiva disponible de $277.597.344.

Nuestro Gran Presidente

La celebración de la paz entre el Japón y la Rusia no es solamente el triunfo de una sabia diplomacia de ambas partes, sino también un triunfo añadido á la hoja de servicios importantes del Presidente Roosevelt.

¿Qué otro hombre público del mundo podría haber realizado eso? ¿Quién entre los estadistas y gobernantes del mundo tuvo el intimo discernimiento de descubrir el momento propicio, la sagacidad para adoptar el modo de proceder y el valor de hacer las gestiones requeridas? ¿Qué otro habiéndolo intentado podría haber llevado á cabo la magna empresa?

Ese servicio á la humanidad le ha dado al Presidente el más alto rango y prestigio entre los grandes hombres de los tiempos modernos. Los nombres de Gladstone y de Bismarck no son más grandes, y bajo algunos concebtos son distintamente menores. Ni Webster ni Blaine son más eminentes. Sólo Lincoln y Washington entre los hombres ilustres americanos ocupan un lugar más alto que este sabio, valiente, sincero y bondadoso Presidente nuestro, que hoy se muestra tan capaz de reconciliar naciones hostiles, como de hacer la paz entre los discordes elementos industriales de su país.

Edison, el Pacífico

El *Sun* de Nueva York del Domingo, 14 de Mayo, contenía un artículo de cuatro columnas bajo el encabezamiento de "Edison el Pacífico," artículo que es el resultado de una entrevista con el famoso inventor.

Contestando una pregunta relativa al adelanto de sus trabajos sobre la batería acumuladora, dijo Mr. Edison: "Mi idea es lograr que pueda un automóvil para cuatro personas andar 100 millas con una sola carga eléctrica. Hoy podemos hacer eso con carros de gran tamaño; pero la batería es demasiado pesada para el automóvil de viaje. El límite práctico en la actualidad es 50 millas para el "tonneau."

"Muy á menudo se me pregunta en qué estoy trabajando y en cuanto tiempo completaré mi invento. No es fácil responder á ninguna de esas preguntas. Hoy me ocupo todavia en trabajosque empecé hace quince años, y está incompleto aún. Algunos están ya en el mercado y hoy les estoy haciendo las mejoras necesarias. Otras de mis obras no conoce todavia el público. Hace cuatro años que me ocupo en perfeccionar esta batería acumuladora. Por ocho años trabajé para producir via en trabajos que empecé hace quince años, he estado trabajando sobre el fonógrafo.

"Todavia dedico una buena parte de mi tiempo á perfeccionar el fonógrafo."

En contestción á otras preguntas dijo Mr. Edison. "El más largo tiempo que jamás trabajé sin cesar fué por cinco dias y cinco noches consecutivas. Fué esto cuando estuve haciendo mis experimientos sobre la luz incandescente. Otra vez trabajé cuatro dias y cuatro noches sin descansar. Esto fué inmediatamente antes de la apertura de la Estación de la calle Pearl. No sabíamos lo que iba á suceder; temíamos que habría una explosión cuando dejásemos entrar la corriente eléctrica. Todos decian que iba á ser un fracaso. Aplicámos la corriente, y todo funcionó bien, y sin el menor contratiempo, y hace ocho años que sigue funcionando satisfactoriamente. Insomnio? Me río cuando oigo hablar de esto. Un hombre vino á verme una vez—no podia dormir; padecia de insomnio, y esto le tenía muy atormentado. Yo le curaré á Usted, le dije. Le puse á trabajar dándole á una bomba de mecurio, y diciéndole que continuase sin cesar por cierto tiempo. Como padecía de insomnio no podia alegar motivo alguno para excusarse. Al cabo del tercer día encontré la bomba hecha pedazos, y á la víctima del insomnio profundamente dormido entre los escombros. El sueño no es más que una herencia. Si el sol continuase alumbrando incesantemente, la gente con el tiempo perdería el hábito de dormir."

Mr. Edison, aunque felizmente casado, tiene la misma opinión que Mr. Tesla sobre la cuestión del casamiento de los investigadores científicos. En contestación á una pregunta sobre si en su opinión llegará á perfeccionare la telegrafía sin alambres, dijo: "Seguramente que asi opino. Yo creo que el mayor obstáculo que jamás ha habido para lograrse eso ha sido el reciente matrimonio de Marconi; pero él se acostumbrará con el tiempo á la vida de casado, y volverá á continuar sus experimentos. Es dudoso, sin embargo, que pueda impedir absolutamente la interposición de otros despachos."

Mr. Edison parece no estar satisfecho con la tierra como teatro de esta investigación, y concede que el problema de nuestra comunicación con otros planetas está fuera de su alcance. "Yo limito mis investigaciones científicas más abajo del ápice de la Montaña del Himalaya," continuó él diciendo, "y le dejo á Mr. Tesla todo el espacio arriba de ese punto; ese es su campo de batalla—el campo de la electricidad astronómica. Creo, sin embargo, que el problema lo resolverá el perfeccionamiento del telescopio más bien que la telegrafía sin alambres.

Mr. Edison habló luego algo sobre sus procedimientos para llevar á cabo sus inventos. "Es una lección de las eternas laws del desarrollo. Mi propia experiencia, asi como la de otros inventores con quienes he hablado, es que cuando se consigue algo por nada se puede estar seguro de hallarse en un camino errado. Cuando se obtiene un resultado sin asiduous esfuerzos, sólo hay aparentemente una regla que seguir y es botar lo que se ha obtenido, y empezar á trabajar de nuevo, porque se ha andado por un sendero errado."

La Cuestión de la Moneda Corriente

Hay que contar la cantidad de moneda corriente en poder de los Estados Unidos cada vez que ocurre un cambio en la Tesorería de la nación. Ocho años ha, cuando el Hon. Ellis H. Roberts fué nombrado Tesorero, había $800.-000,000.00 en la Tesorería. Cincuenta funcionarios expertos necesitaron ocho meses para contar todo ese dinero. Sixty empleados de la Tesorería están en la actualidad contando el mismo dinero, desde los centavos hasta las monedas metálicas y paper the más valor, como son los bonos de $50,000, y no se espera que acabarán de contar antes de 1.o de Marzo de 1906. Mujeres cuentan el papel moneda y hombres el oro y la plata. La mujer que en un día de siete horas cuenta 16,000 billetes de banco se considera que ha hecho una buena tarea. Todo el papel moneda se ata en paquetes. El oro y la plata se cuentan pesándolos en balanzas de una exactitud matemática. Hay hoy en la Tesorería del Gobierno Federal 5,000 toneladas de moneda metálica, 30,000 de las cuales son de monedas de oro. Le cuesta al Gobierno $16,000 la operación de contar sus $1,152.218,725.00. Por supuesto que no es excesivo el precio que se paga á esos hombres y mujeres por contar tan enorme cantidad de dinero; pero es un desperdicio de dinero, y demuestra que el Gobierno se conduce todavía á la antigua en esta materia, en vez de adoptar los adelantados y prácticos métodos del mundo de los negocios en la actualidad.

El Sistema Métrico

Un atento estudio de todo el asunto de los pesos y medidas, dice el *Canadian Manufacturer,* demuestra el hecho que en ningún país en que se ha obligado al pueblo á adoptar el metro y sus derivados, han dado semejantes medidas un buen resultado por sus méritos. No han hecho más que producir gran confusión.

La soga ó cable más grande jamás usada para el arrastre se acaba de fabricar para un camino subterraneo de un distrito de Glasgow. Tiene siete millas de largo, 4⅝ fulgadas de circunferencia, y pesa cerca de 60 toneladas. Se hizo de acero de crisol enteriza y sin ayustar. Cuando se coloque en su lugar formará un circulo a rededor de Glasgow, cruzando el Clyde en su curso y correrá con una velocidad de 15 millas por hora.

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Welch ein anderer Mann der Oeffentlichkeit der Welt konnte dies zustande gebracht haben? Wer unter den Staatsmännern und den Regenten der Nationen hatte die grosse Einsicht den richtigem Moment dafür zu wählen, den Scharfsinn den richtigen Weg zu treffen oder den Muth, das Richtige überhaupt zu thun? Wer sonst denn, konnte dieses grosse Unternehmen, nachdem ein Versuch eingeleitet war, zu Ende gebracht haben?

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Edison, el Pacífico

El *Sun* de Nueva York del Domingo, 14 de Mayo, contenia un articulo de cuatro columnas bajo el encabezamiento de "Edison el Pacifico," articulo que es el resultado de una entrevista con el famoso inventor.

Contestando una pregunta relativa al adelanto de sus trabajos sobre la bateria acumuladora, dijo Mr. Edison: "Mi idea es lograr que pueda un automóvil para cuatro personas andar 100 millas con una sola carga electrica. Hoy podemos hacer eso con carros de gran tamaño; pero la bateria es demasiado pesada para el automóvil de viaje. El limite práctico en la actualidad es 50 millas para el "tonneau."

"Muy á menudo se me pregunta en qué estoy trabajando y en cuanto tiempo completaré mi invento. No es fácil responder á ninguna de esas preguntas. Hoy me ocupo todavia en trabajosque empecé hace quince años, y está incompleto aún. Algunos están ya en el mercado y hoy les estoy haciendo las mejoras necesarias. Otras de mis obras no conoce todavia el público. Hace cuatro años que me ocupo en perfeccionar esta bateria acumuladora. Por ocho años trabajé para producir vía en trabajos que empecé hace quince años, he estado trabajando sobre el fonógrafo.

"Todavia dedico una buena parte de mi tiempo á perfeccionar el fonógrafo."

En contesteión á otras preguntas dijo Mr. Edison. "El más largo tiempo que jamás trabajé sin cesar fué por cinco dias y cinco noches consecutivas. Fué esto cuando estuve haciendo mis experimientos sobre la luz incandescente. Otra vez trabajé cuatro dias y cuatro noches sin descansar. Esto fué inmediatamente antes de la apertura de la Estación de la calle Pearl. No sabiamos lo que iba á suceder; temiamos que habria una explosión cuando dejásemos entrar la corriente eléctrica. Todos decian que iba á ser un fracaso. Aplicámos la corriente, y todo funcionó bien, y sin el menor contratiempo, y hace ocho años que sigue funcionando satisfactoriamente. Insomnio? Me rio cuando oigo hablar de esto. Un hombre vino á verme una vez—no podia dormir; padecia de insomnio, y esto le tenia muy atormentado. Yo le curaré á Usted, le dije. Le puse á trabajar dándole á una bomba de mecurio, y diciéndole que continuase sin cesar por cierto tiempo. Como padecia de insomnio no podia alegar motivo alguno para excusarse. Al cabo del tercer dia encontré la bomba hecha pedazos, y á la victima del insomnio profundamente dormido entre los escombros. El sueño no es más que una herencia. Si el sol continuase alumbrando incesantemente, la gente con el tiempo perderia el hábito de dormir."

Mr. Edison, aunque felizmente casado, tiene la misma opinión que Mr. Tesla sobre la cuestión del casamiento de los investigadores cientificos. En contestación á una pregunta sobre si en su opinión llegará á perfeccionare la telegrafia sin alambres, dijo: "Seguramente que asi opino. Yo creo que el mayor obstáculo que jamás ha habido para lograrse eso ha sido el reciente matrimonio de Marconi; pero él se acostumbrará con el tiempo á la vida de casado, y volverá á continuar sus experimentos. Es dudoso, sin embargo, que pueda impedir absolutamente la interposición de otros despachos."

Mr. Edison parece no estar satisfecho con la tierra como teatro de esta investigación, y concede que el problema de nuestra comunicación con otros planetas está fuera de su alcance. "Yo limito mis investigaciones cientificas más abajo del ápice de la Montaña del Himalaya," continuó él diciendo, "y le dejo á Mr. Tesla todo el espacio arriba de ese punto; ese es su campo de batalla—el campo de la electricidad astronómica. Creo, sin embargo, que el problema lo resolverá el perfeccionamiento del telescopio más bien que la telegrafia sin alambres.

Mr. Edison habló luego algo sobre sus procedimientos para llevar á cabo sus inventos. "Es una lección de las eternas laws del desarrollo. Mi propia experiencia, asi como la de otros inventores con quienes he hablado, es que cuando se consigue algo por nada se puede estar seguro de hallarse en un camino errado. Cuando se obtiene un resultado sin asiduous esfuerzos, sólo hay aparentemente una regla que seguir y es botar lo que se ha obtenido, y empezar á trabajar de nuevo, porque se ha andado por un sendero errado."

La Cuestión de la Moneda Corriente

Hay que contar la cantidad de moneda corriente en poder de los Estados Unidos cada vez que ocurre un cambio en la Tesoreria de la nación. Ocho años ha, cuando el Hon. Ellis H. Roberts fué nombrado Tesorero, habia $800.000,000.00 en la Tesoreria. Cincuenta funcionarios expertos necesitaron ocho meses para contar todo ese dinero. Sixty empleados de la Tesoreria están en la actualidad contando el mismo dinero, desde los centavos hasta las monedas metálicas y paper the más valor, como son los bonos de $50,000, y no se espera que acabarán de contar antes de 1.o de Marzo de 1906. Mujeres cuentan el papel moneda y hombres el oro y la plata. La mujer que en un dia de siete horas cuenta 16,000 billetes de banco se considera que ha hecho una buena tarea. Todo el papel moneda se ata en paquetes. El oro y la plata se cuentan pesándolos en balanzas de una exactitud matemática. Hay hoy en la Tesoreria del Gobierno Federal 5,000 toneladas de moneda metálica, 30,000 de las cuales son de monedas de oro. Le cuesta al Gobierno $16,000 la operación de contar sus $1,152.218,725.00. Por supuesto que no es excesivo el precio que se paga á esos hombres y mujeres por contar tan enorme cantidad de dinero; pero es un desperdicio de dinero, y demuestra que el Gobierno se conduce todavia á la antigua en esta materia, en vez de adoptar los adelantados y prácticos métodos del mundo de los negocios en la actualidad.

El Sistema Métrico

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INTENTIONAL SECOND EXPOSURE

Der Zukunftsamerikaner

Nach Luther Burbank, der Züchter von Pflanzen und Blumen ist, wird der Zukunftsamerikaner eine weit bessere Spezie der menschlichen Race sein, wie heute. Herr Burbank sagt:

"In der Handhabung von Pflanzen und Blumen führe ich Farbe hier und Form dort ein, Grösse oder Geruch, je nach dem Bedarf des event. Produktes. In dieser Behandlung werden, jedoch, die Anförderungen der Natur streng befolgt. Nur ihre grösste Gewalt wird dabei überall verwendet. Und Alles was für Blumen und Pflanzen gethan wurde, hat Mutter Natur bereits für das amerikanische Volk zustande gebracht. Durch Blutvermischung ist in einer Hinsicht Kraft hinzu gekommen, in einer anderen Geisttesmacht und in einer weiteren moralische Stärke. Die Natur allein konnte dies soweit zustande gebracht haben. Die Arbeit menschlicher Hände und menschlichen Geistes kann wahrlich nicht herangezogen werden, wenn es heisst eine Rasse entwickeln. Eine vorbedachte und ausgeplante Blutvermischung allein ist nicht massgebend Völker und Nationen zu gestalten, zu erziehen. Nachdem aber die Natur ihre Pflicht gethan, und die event. Mischung ihr Produkt zurückgelassen, das äusserlich die besten menschlichen Merkmale zu kennzeichnen scheint, dann bleibt weiter nichts übrig, als alles Andere der Umegbung zu überlassen.

Der Mensch hat keineswegs das Höchste bereits erreicht. Der Würdigste hat sich noch nicht überlebt. Im Ausmerzprozess muss der Schwächere noch immer fallen. Der Tüchtigste der Zukunft ist bei Weitem noch nicht der Tüchtigste der Vergangenheit. Mit der richtigen Erziehung und Ausbildung des Kindes wird sich erst eine neue Race entwickeln die moralisch schön und geistig fähig sein wird. Ich glaube kaum, dass der heutige Mensch das Höchste das in ihm schummert erlangt, hervorgebracht hat. Wir besitzen ein Etwas, was allgemein als die fünf Sinne bekannt ist, doch es giebt Menschen starker Geisteskraft, deren Denken sich nie falsch erwiesen und die streng wissenschaftlich ihre Methode ausarbeiten; Menschen, die von der Möglichkeit laut Beweis ablegen, dass ein sechster Sinn zu entwicklen möglich sei. Wo ist Derjenige der behaupten kann, dass der Mensch nicht noch weitere Sinne mit dem Fortschreiten der Evolution entwickeln kann? In allen Volksschulen des ganzen Landes wird heute Psychologie studiert, ein Studium das ohne Zweifel zu neuer Kenntnis der Seele führen muss. Wahrlich, der Mensch der Zukunft dürfte sich als ganz anderes Wesen vom heutigen unterscheiden. Er wird auf uns dann genau so zurückblicken wie wir heute auf unsere Vorahnen es thun.

Ich werde oft beim Lesen von der Zunahme des Wahnsinns, von den vielen Morden und Selbstmorden, sowie den zahllosen fleischlichen Gebrechen entsetzt. Gewiss, Berichte statisticher Natur verkünden Vieles, was uns zum Nachdenken stimmt, und doch bleibt der einzig richtige Standpunkt die Ansicht des Optimisten. Die Zeit muss und wir kommen wenn Wahnsinn verringert, Selbstmorde und Morde weniger werden und aus dem Menschen ein Wesen geschaffen hervortritt, das wenig an Krankheit und körperliche Gebrechen leiden wird. Woimmer eine Nation existirt, die nicht aus verschiedener Zusammensetzung hervorgegangen ist, da giebt es auch verhältnismässig wenig Wahnsinn und Verbrechen einerseits oder erhabene Sitte und Genius andererseits. Hier in Amerika wo die Verschiedenheit des Blutes am grössten ist, weisen Statistiker einen höheren Prozentsatz an Wahnsinn und allen anderen Abweichungen auf. Doch mit dem endlosen und unaufhörlichen Fortschritt der Zeit wird die Allgewalt der Umgebung die amerikanische Nation entwickeln, krystallisieren. Seine verschiedenen Elemente werden sich vereinigen und aus dem Jäteprozess dürfte dann ein menschliches Produkt erstehen, das vielleicht das Edelste sein wird, von dem je zuvor gehört wurde. Farbe, Duft, Grösse und Form die im Pflanzenreich freigelassen wurden, müssen schliesslich ihre Aehnlichkeit in der Zusammensetzung des künftigen Amerikaners bekunden, ihn hervorheben.

Es ist nun die Frage, was am meisten dieser Entwickelung Vorschub leisten kann? Die richtige Erziehung des Kindes allein. Man nähre das Kind ja nicht an pedantischer oder dogmatischer Religion, man gebe ihm Natur. Man lasse seine Seele alles Reine und Schöne einschlürfen. Man erziehe es nur unter angenehmer Umgebung. Wenn es auch mit einer im Dunkeln fühlenden Seele in die Welt kommt, ermögliche man ihm, das Licht zu sehen, zu fühlen. Man schrecke es nicht im frühesten Kindesalter durch die Furch an eine Nachwelt. Es gab wohl nie ein Kind, das durch Höllenfurcht edel und gut gestaltet wurde. Es bleibe der Natur überlassen, ihm das gute und richtige Leben zu lehren; man helfe allenfalls durch eine im Verhältnis gehaltene richtige Nahrung nach. Ein solches Kind muss sich zum tüchtigsten Manne, zur tüchtigsten Frau entwickeln. Man lasse ihm das Beste angedeihen, und zwar durch Verbindung mit den besten äusseren Erscheinungen und der daraus entstandene Mensch nimmt dann das Gute in sich auf, wie die Pflanze Thau und Sonnenschein aufsäugt."

Das amerikanische Telephon-System

Herr C. J. H. Woodbury, der Unteringenieur der amerikanischen Telephon- und Telegraphen Gesellschaft, hielt kürzlich in der Abtheilung für Kunst und Wissenschaften des Polytechnischen Institutes in Brooklyn eine interessante Vorlesung, welche "Das Telephon-System von Heute" zum Gegenstand hatten. Ueber die Ausdehnung des heutigen Systems bemerkte Herr Woodbury Folgendes:

"Die ganze Länge der Telephon-Linie des Bellsystems in den Vereinigten Staaten beträgt durchschnittlich drei und neunundzwanzig hundertstel Meilen für jeden Telephon Apparat, and lässt man das sogen. Distanz-Telephon bei Seite, beträgt es 55 per Cent. des unterirdischen Drathes. Wenn nun Jemand ein anderes Telephon aufruft, beträgt die zu seiner Verfügung gestellte Linie sechs und achtundfünfzig hundertstel Meilen, so dass es wirklich billiger ist zu sprechen als zu reisen. Die langen Distanzdräthe verbinden das ganze System zu einem grossen Ganzen von dem atlantischen Ocean bis zur westlichen Seite des Mississippi Thales, wo die kurze Lücke von dung mit dem ähnlichen Systeme von Linien, welche die verschiedenen Städte der Abweichung gegen den stillen Ocean an einander schliessen, herzustellen.

"Dieses Wachsthum der dem System untergeordneten Linien ist das Resultat eines Beschlusses, den Gebrauch des Fernsprechers auf jede Stadt, so klein sie auch sei, in den Vereinigten Staaten auszudehnen und in allen grösseren und kleineren Städten den Fernsprecher zu dem billigsten Preise einem jeden Bewohner leicht zugänglich zu machen, dessen Einkommen es gestattet, in den Strassenbahnen zu fahren. Die Ausdehnung welche durch diese Politik bereits erreicht wurde, lässt sich aus der Thatsacae ermessen, dass, während der letzte Census-Bericht ungefähr 10,602 Städte, Dörfer und Gemeinden in den Vereinigten Staaten aufweist, eine Fernsprecher-Verbindung mit 26,128 verschiedenen Ansiedlungen besteht und der unaufhörliche Wachsthum der Erweiterungen schiebt von Jahr zu Jahr den Punkt hinaus, an welchem der Ausdehnung des Telephon-Systems endlich Halt gerufen wird, was von den Anhängern der konservativen Partei wiederholt in Aussicht gestellt wurde."

In Bezug auf das lange Distanz-Telephon sagte er weiter: "Der sogen. Zoll-oder Zöllnerdienst fing mit der Linie an, welche von Boston nach Lowell im Jahre 1879 gebaut wurde und zeigte die durch den Fernsprecher dargebotenen dienstlichen Möglichkeiten, sowie auch die enormen technischen Schwierigkeiten welche zu überwinden waren. In einem Zeitraume von 25 Jahren ist die Ausdehnung der Distanz-Telephone von 27 bis auf 270,000 Meilen gestiegen, jedoch sind damit nicht alle Linien ausserhalb irgend einer Stadtgemeinde eingeschlossen, da dieselben mit Linien von vier Millionen Meilen lang verbunden werden können, und, von diesen Punkten sich ausbreitend, den in Frage stehenden Subskribenten erreichen.

"Wenn Jemand einen Distanzfernsprecher benützt, wird eine grosse Quantität von Material zu seiner ausschliesslichen Verfügung gestellt—so z. B. wenn man von Boston mit Omaha sprechen will, wie dies eine Geschäftsfirma jeden Morgen thut, beträgt der Werth dieses, zu ihrer alleinigen Verfügung stehenden Stückes der Linie und des Apparates, dem gegenwärtigen Preise des Kupfers zufolge, über 283,000 Dollar und benöthigt die Dienste von neun Beamten um an den Apparat-Verbindungen der verschiedenen Punkte, längst der in Anspruch genommenen Linie, theilnehmen zu können.

"Die Ausdehnung des Fernsprechdienstes in der Anzahl, sowie auch des Zweckes wegen, wird mehr und mehr zu einer Nothwendigkeit, deren Werth jetzt allgemein amerkannt ist. Diese Zunahme belief sich im Jahre 1904 auf 701,147 Telephone und erstreckte sich über 712,147 Meilen Drathes, welcher mit den dazugehörigen Arbeiten 33.436,700 Dollar kostete, was die ganze Anzahl der Telephon-Apparate auf 4,480,564 Meilen brachte und 4,671,088 Meilen Drathes in Anspruch nahm, um die Kunden der Gesellschaft zu erreichen."

New York's Ausfuhr

Die durch den New Yorker Hafen exportirten Waaren während des augenblicklichen Etatjahres wurden auf 684.497,042 Dollar geschätzt im Vergleich mit dem Vorjahre, das sich auf nur 600.170,033 Dollar belief. Die diesjährige Ausfuhr überstieg jedes vorangegangene Jahr um 66 Millionen Dollar. Die Ausfuhr einheimischer Waaren wurde auf 506.448,437 Dollar, verglichen mit 493.698.208 Dollar im Vorjahre, geschätzt; die auswärtige Ausfuhr belief sich auf 13.491,306 Dollar, verglichen mit 13.102,304 Dollar des Vorjahres.

Edison, der Friedliebende

Die Sonntagsausgabe der *New York Sun*, vom 14. Mai, enthält einen vierspaltigen Artikel betitelt *Edison der Friedliebende* und giebt das Resultat einer Zusammenkunft wieder, die mit dem berühmten Erfinder stattfand.

In Beantwortung einer Frage betreffs des Fortschreitens seines Akkumulators, antwortete Herr Edison: "Es ist meine Absicht, es möglich zu machen für ein Gefäss für vier Personen hundert Meilen mit einer Ladung zu laufen. Es kann dies jetzt leicht zwar mit schweren Lowry's oder Truckwagen gethan werden, doch der Akkumulator ist dann zu schwer für das Auto. Die praktische Grenze augenblicklich ist fünfzig Meilen die Tonne.

"Gar oft werde ich befragt, woran ich augenblicklich arbeite und wie lange es mir dauert, eine Erfindung zu beenden. Keine dieser Fragen ist sehr leicht zu beantworten. Ich arbeite heute noch an Sachen, welche ich vor fünfzehn Jahren angefangen und die noch immer nicht vollendet sind. Viele derselben sind bereits im Handel und ich verbessere sie jetzt nur; andere, hingegen, sind dem Publikum gänzlich unbekannt. Seit vier Jahren bin ich bereits mit dem Akkumulator beschäftigt. Beim Glühlicht arbeitete ich acht Jahre lang ununterbrochen und seit fünfunddreissig Jahren bin ich bereits an den Phonographen Apparat thätig.

"Ein gehöriger Theil meiner Zeit ist augenblicklich an der Verbesserung des Phonographen in Anspruch genommen."

Auf Befragen wegen anderer Sachen, sagte Herr Edison, dass "Die längste Zeit an der ich ununterbrochen je gearbeitet habe waren fünf Tage und fünf Nächte ohne zu schlafen. Es war dies während der Zeit der Blitzexperimente. Einmal arbeitete ich vier Tage und vier Nächte—gerade vor der Eröffnung der Pearl Strassen Station. Wir wussten nicht was das Resultat sein werde; wir erwarteten, dass etwas explodiren würde, als wir den Strom andrehten. Alle glaubten es werde sich als ein Mislingen erweisen. Als der Strom aber angedreht wurde, ging der Mechanismus richtig von Statten ohne die leiseste Unterbrechung und lief so während acht langer Jahre. Schlaflosigkeit? Ich muss lachen, wenn Leute darüber sprechen. Ein Herr kam einst zu mir—er konnte nicht schlafen; er beschwerte sich über die sogen. "Schlaflosigkeit" und litt unaussprechlich darunter. Ich bot mich an ihn zu kuriren. Ich stellte iho an eine Quecksilber Pumpe, zeigte ihm die daran zu leistende Arbeit und prägte ihm ein, dass er die Arbeit bestimmt innerhalb einer gegebenen Zeit fertig haben müsse, und, da er sowieso nicht schlafen könne, habe das Einstellen der Arbeit ja doch keinen Zweck. Als der dritte Tag zu Ende war, fanden wir, dass die Pumpe in Stücke zerbrochen und der an Schlaflosigkeit Leidende schlief gemächlich auf den Trümmern derselben. Der Schlaf ist nur ein uns vermachtes Erbtheil. Wenn die Sonne anhaltend scheinen würde, würde der Mensch in Zeit die Schlafgewohnheit ganz aufgeben."

Obgleich Herr Edison selber glücklich verheiratet ist, theilt er dennoch Herrn Tesla's Ansicht mit Bezugnahme auf das Heirathen wissenschlaftlicher Erfinder. In Beantwortung einer Frage, ob, seiner Ansicht nach, die drathlose Telegraphie vervollständigt werden würde, antwortete er:—"Ich glaube ganz sicher daran. Den grössten Aufenthalt den die Erfindung erlebt hat, war leider die Verheirathung jüngst des Herrn Marconi's: doch es wird bald überstanden sein und er wird dann mit seinen Experimenten weiterschreiten können. Es ist, jedoch, zweifelhaft, ob er über den Einfluss anderer Botschaften wird ganz verfügen können."

Herr Edison scheint mit der Erde, als Experimentirplatz seiner Erfindungen vollkommen zufrieden zu sein. Das Problem, mit anderen Planeten verbunden werden zu können, giebt er zu, sei ganz über seinem Bereiche. "Ich beschränke meine wissenschaftlichen Forschungen unterhalb der Spitze des Himalaya Gebirges", fuhr er fort "und stelle Herrn Tesla jenen Raum zur Verfügung—das ist sein Terrain, das Feld astronomischer Elektrizität. Ich muss, jedoch, gestehen, dass diese Frage eher durch die Lense des Teleskopen als durch die drathlose Telegraphie bestimmt zu werden zu sein scheint."

Und Herr Edison fuhr fort, und liess etwas über den Fortschritt seiner Erfindung vernehmen. "Es ist eine grosse Lehre des ewigen Gesetzes der Entwickelung. Meine eigene Erfahrung, wie die anderer Erfinder, mit welchen ich gesprochen habe, ist die: wer etwas umsonst erhält, darf überzeugt sein, dass es nicht viel mehr werth ist. Wer Resultate ohne wirklich hart angestrengte Arbeit erzielt, giebt es, voraussichtlich, wohl eine einzige Regel zu befolgen, nämlich die, die ganze Arbeit fortzuwerfen und vollständig vom Neuen anzufangen, weil das bisherige Arbeiten nur im Dunkeln war."

Amerikanische Geräthe

Das Geheimniss des ausserordentlichen Erfolges amerikanischer Geratschaften im Auslande steht vor Allem ihrer ungewöhnlichen Anpassbarkeit der stest wachsenden Beschaffenheit des ausländischen Bodens, der verschiedenen Ernten und des Klimas zuzuschreiben. Amerkanische Fabrikanten die sich bemühen den verschiedenen, und von einander so fernliegenden. Anforderungen ihres eigenen grossen Landes anzupassen, finden sich fast jedem Probleme gegenüber, so weit die Konstruktion landwirthschaftlicher Gerathe in Betracht kommt, gewachsen; doch wenn sie die Anforderungen, resp. die Konditionen ausländischen Feldbodens in Betracht zu ziehen haben, so konnen sie stets die zu Hause gewonnenen Erfolge und ihre früheren Erfahrungen zu Rathe ziehen und dieselben den neuen Problemen zuwenden.

In solcher Weise passt sich ein gewisser Pflug der für Hügelarbeit im Nordwesten bestimmt war, mit geringer Aenderung gewissen Theilen Süd-Amerikas bestens an, wo Bodenkonditionen mit den hiesigen verwandt scheinen. Der Pflanzer der in den grosser Steppen des Mittelwestens so beliebt wurde erwies sich als Idealpflug in Süd-Afrika, wo er die grösste Befriedigung bot; und ein anderer sehr beliebter Pflug unseres Westens wurde sofort in Argentinien ungemein beliebt

Um den Anforderungen auswärtiger Käufer zu entsprechen, event. ihren Vorurtheilen befriedigen zu können, besonders aber imstande zu sein ihnen bessere Artikel zu offeriren wie sie bisher zu erhalten es gewohnt waren, erwies es sich für amerikanische Fabrikanten nothwendig, eine Politik einzuschlagen, die halbwegs der britischen ähnlich aus sah, nämlich, ausländischen Käufern ihre eigenen traditionellen Muster zu offeriren und ihnen zu sagen "Nimmt es oder lasst es bleiben"; oder den deutschen Plan gar zu befolgen eine genaue Nachahmung der heimatlichen oder örtlichen Geräthe zu verkaufen. Es dauerte unseren Fabrikanten nicht lange und ihr Versuch, ausländische Käufer für die Hervorragenheit unserer Geräthesorten und deren Gebrauchsanwendung zu gewinnen, erwies sich als erfolgreich; es geschah dies aber nicht durch das Herauswerfen von Geld und Energie dass diese Leute "ausgebildet" wurden, sondern durch das Konstruiren gerade solcher Arten und Maschinensorten, welche lokalen Vorurtheilen und Gebräuchen in jeder Hinsicht gewachsen waren.

Um den Landbebauern Britisch-Indiens das Richtige bieten zu konnen, musste somit der Pflugbalken ungewohnlich lang und das Zieheisen oder die Pflugschaar verhältnismässig kurz gebaut werden. Mit geringer Aenderung erwiesen sich die dahin gesendeten amerikanischen Weise die an sie gestellten Anforderungen zu verrichten und erwarben sich ausserdem grosser und bleibender Beliebtheit denn sie sind leicht, dauerhaft und tüchtig.

In fast jedem Falle wo lokale Vorurtheile gegen amerikanische Geräthe vorherrschen, erwies es sich, dass dieselben eher gegen unbedeutende Kleinigkeiten als gegen wirkliche Konstruktionsfehler gemacht wurden; es gelang auch den tüchtigen Verkäufern solche Unvollkommenheiten bald durch ihre Fabrikanten perfektiren zu lassen und waren bald in den Stand gesetzt, ihre so verbesserten Maschinen in den Markt zu bringen. Eine zeitlang beschwerten sich auswärtige Käufer dass amerikanische landwirthschaftliche Maschinen, besonders Mäh und Erntemaschinen zu leicht gebaut seien, um dauerhaft bleiben zu können. Doch erst nach langanhaltenden Versuchen vergewisserten sich die dortigen Käufer, dass die anderswo gebauten Maschinen zu klobig, zu schwer seien.

Woimmer Stärke von weniger Bedeutung war, benutzten amerikanische Maschinenbauer Holztheile, und in den Stahltheilen wurden Grosse und Gewichtsschwere der event. Spannkraft der die Maschine ausgesetzt war, gleichgebaut; in der Weise ergab es sich, dass die betreffenden Maschinen sich in jeder Hinsicht stark genug erwiesen, allen Anforderungen zu entsprechen und den besten Maschinen ihrer Art ebenbürtig zu werden; dabei wiegen sie nicht nur weniger, sondern kosten auch viel geringer als Maschinen anderer Konstruktion, oft sogar nur die Hälfte. Die britischen und kontinentalen Maschinen, die die neutralen Märkte vor Einführung amerikanischer Maschinen beherrschten, waren mit Stahl und Eisen sozusagen bepackt, abgesehen von den Extrakosten und der Klobigkeit. Theile z. B. die keiner Spannkraft ausgesetzt waren, waren aus zolldickem Eisen verfertigt. Das Resultat davon war, dass zwei, drei, ja vier Pferde oder sonstige Ziehthiere erforderlich waren, diese klobigen Maschinen zu ziehen, wohingegen eine Maschine amerikanischer Konstruktion, von leichterer Bauart, dieselbe Arbeit mit halber Thierkraft verrichte. Solche Vorzüge leuchteten den Landwirthen bald ein, und man darf behaupten, dass die landwirthschaftlichen Maschinen amerikanischer Muster die Industrie der ganzen Welt sozusagen revolutionirt hat.

Um mit den auswärtigen Käufern in richtiger Beziehung treten zu können, hatten selbstverständlich unsere Fabrikanten tüchtige Verkäufer nach allen wichtigen Weltmärkten hinüber zu senden. Dise Herren studirten zuvörderst die im Gebrauch befindlichen Pflüge und schickten zuweilen Musterproben nach Hause, um deren Entwürfe und Machination den Maschinenbauern vorzuführen. Die Export-Verkäufer die mit ihren Erfahrungen heimischer Sorten leicht das Passende zu beurtheilen imstande waren, fanden bald, dass für heimische Zwecke bestimmte und in grosser Anzahl zu Hause verfertigte Maschinen sich, mit nur geringer Änderung, auswärtigen Anforderungen gut anpassten. In solchem Falle war der Erfolg ein prompter und sogar verhältnismässig leicht.

In anderen Fällen, hingegen, mussten neue Muster angefertigt werden, solche, welche den bestehenden Sorten auswärtiger Geräthe mehr entsprachen. Doch, selbst hier erwies sich die vielseitige heimatliche Erfahrung des Fabrikanten von ungeheuerer Wichtigkeit.

Der grösste Zuckerfichten-Wald des Weltballes fängt beim Klamath an und erstreckt sich nördlich hinaus bis an den glitzernden Gipfeln von Mont Pitt, Mont Diamond, Thielson, Scott und den Drei Schwestern, bis zum Fusse von Jefferson, die gegen 200 Meilen nördlich liegen. Es ist dies ein ungeheueres Waldreich und wird vom Wild des Tiefwaldes ausschliesslich beherrscht; es schliesst ein Gebiet von über viertausend Quadratmeilen im Umfange ein. Wer kann sich davon wohl eine Vorstellung machen! So gross, also, wie der ganze Staat Connecticut, halb so gross wie Massachusetts und dreimal so gross wie der Staat Rhode Island. Fünfhundert Quadratmeilen dieser Landstrecke wird vom schützenden Arm "Onkel Sam's" bewacht; es patrollieren dort eine Armee von Förstern während der Sommermonate die jeden Distrikt mit wachsamen Auge beschützen.

AMERICAN WIND MILLS

In studying any line of modern advancement it will be found that progress in material matters has been achieved through man's constant and successful efforts to harness Nature's great forces and bring them under the yoke of his intelligence.

As a typical example of the progressive spirit of the age, and as illustrating the results which may be achieved when science and invention join hands, the modern wind mill is a striking illustration. Centuries ago man realized in a vague way the possibilities of harnessing the wind and employing it as a servant to perform laborious tasks, but the devices constructed for this purpose were crude and primitive in the extreme. For a long time no progress or improvement was made in the clumsy and inefficient machines built for this purpose. In an age, however, when the inventive faculty of man applied itself to all forms of mechanical devices the wind engines came in for their share of attention, and the development of the machine from the heavy, lumbering, gigantic mill of the olden days to the light, strong, effective machine of to-day is the result.

As manufactured to-day, windmills may be divided into two classes: those which are used for pumping purposes only (pumping mills) and those which serve to furnish motive power to machines requiring a rotary motion (power mills).

For pumping water windmills have come into almost universal use. Farmers, dairymen, cattle-raisers and all others interested in obtaining large quantities of water, have long recognized the windmill as the most economical means for accomplishing their object and have learned to look upon it as an indispensable adjunct to their operations. Life in the rural districts has been made worth living by the advent of the modern windmill, which enables the owner of a country residence to enjoy all city conveniences and comforts in the way of baths, running water, wash stands, sinks, lawn sprinklers, etc., besides affording him protection against fire and an abundant supply of water for barn and stable use. In like manner, but at a correspondingly greater cost, private and public institutions situated in the country can have water-works of their own, which, once installed, will be entirely automatic and cause practically no expense for their maintenance. Railroads are also among the beneficiaries of wind power, their water-stations being generally supplied with water pumped by windmills.

Wherever windmills are used for any of the purposes mentioned thus far, it will be found desirable and, in fact, necessary to provide a tank (of either wood or galvanized steel), which, if not too large, may be placed inside of the windmill tower, so as to enable the windmill to pump water ahead for use during occasional calms and incidentally to obtain the necessary pressure to deliver the water at any point desired. For tanks of great capacity, special substructures are made use of, which will prove sufficiently strong to support not only the tank but also a windmill outfit placed inside of the latter. For irrigating purposes the self-regulating windmill stands without a peer, and to give an account of the wonders it has performed in this connection, would sound like a tale from the Arabian Nights. Suffice it to say that by its instrumentality arid and unproductive tracts of land (deserts to all intents and purposes) have been converted into veritable gardens of Eden and in many cases outfits used for this purpose have completely paid for themselves in the course of a single year by the increase in, and the enhanced value of, the crops produced.

Power windmills are extensively used for operating light farm machinery, such as feed grinders, corn shellers, circular saws, etc., and, if necessary, will also drive a pump by means of the proper connections. The possibilities of wind power on the farm are practically unlimited and furnish an immense field for speculation.

Established in 1854, the U. S. Wind Engine & Pump Co. rank as the oldest windmill factory in the world. Their products have been exported to every corner of the globe and the reputation of the concern has become world-wide. While primarily a windmill factory, it soon became necessary for this company to start making the many other goods used in connection with their chief line. Thus they began to build pumps, tanks and accessories at an early stage of their career, and to-day are in a position to supply their customers' wants in these lines as well as in that of windmills, which latter are made by them in sizes ranging from 6 to 40 feet in diameter, and of both wood and galvanized steel.

The construction of steel towers and so-called substructures for supporting elevated tanks has long constituted one of the chief branches of their business, and has only recently caused them to increase their facilities in this line so as to cope with the ever-increasing demand for these goods. In connection with their power windmills they manufacture a line of feed grinders, corn shellers, wood saws, etc., all of which are designed with a special view to obtaining the maximum of efficiency with a minimum of power.

As this issue is going to press, new buildings, now in course of construction, are nearing completion and the new year will find the company better equipped than ever to serve their customers in a prompt and efficient manner. All export correspondence should be addressed to them at Batavia, Ill., U. S. A., where it will be attended to by a special department recently organized for that purpose. All inquiries will be promptly answered and business will be facilitated with the utmost care and accuracy.

EXTENSIVE PLANT OF THE U. S. WIND ENGINE AND PUMP CO., BATAVIA, ILL., U. S. A.

dass es nicht viel mehr werth ist. Wer Resultate ohne wirklich hart angestrengte Arbeit erzielt, giebt es, voraussichtlich, wohl eine einzige Regel zu befolgen, nämlich die, die ganze Arbeit fortzuwerfen und vollständig vom Neuen anzufangen, weil das bisherige Arbeiten nur im Dunkeln war."

Amerikanische Geräthe

Das Geheimniss des ausserordentlichen Erfolges amerikanischer Gerätschaften im Auslande steht vor Allem ihrer ungewöhnlichen Anpassbarkeit der stest wachselnden Beschaffenheit des ausländischen Bodens, der verschiedenen Ernten und des Klimas zuzuschreiben. Amerkanische Fabrikanten die sich bemühen den verschiedenen, und von einander so fernliegenden. Anforderungen ihres eigenen grossen Landes anzupassen, finden sich fast jedem Probleme gegenüber, so weit die Konstruktion landwirthschaftlicher Geräthe in Betracht kommt, gewachsen; doch wenn sie die Anforderungen, resp. die Konditionen ausländischen Feldbodens in Betracht zu ziehen haben, so können sie stets die zu Hause gewonnenen Erfolge und ihre früheren Erfahrungen zu Rathe ziehen und dieselben den neuen Problemen zuwenden.

In solcher Weise passt sich ein gewisser Pflug der für Hügelarbeit im Nordwesten bestimmt war, mit geringer Aenderung gewissen Theilen Süd-Amerikas bestens an, wo Bodenkonditionen mit den hiesigen verwandt scheinen. Der Pflanzer der in den grossen Steppen des Mittelwestens so beliebt wurde erwies sich als Idealpflug in Süd-Afrika, wo er die grösste Befriedigung bot; und ein anderer sehr beliebter Pflug unseres Westens wurde sofort in Argentinien ungemein beliebt.

Um den Anforderungen auswärtiger Käufer zu entsprechen, event. ihren Vorurtheilen befriedigen zu können, besonders aber imstande zu sein ihnen bessere Artikel zu offeriren wie sie bisher zu erhalten es gewohnt waren, erwies es sich für amerikanische Fabrikanten nothwendig, eine Politik einzuschlagen, die halbwegs der britischen ähnlich aus sah, nämlich, ausländischen Käufern ihre eigenen traditionellen Muster zu offeriren und ihnen zu sagen "Nimmt es oder lasst es bleiben"; oder den deutschen Plan gar zu befolgen eine genaue Nachahmung der heimatlichen oder örtlichen Geräthe zu verkaufen. Es dauerte unseren Fabrikanten nicht lange und ihr Versuch, ausländische Käufer für die Hervorragenheit unserer Geräthesorten und deren Gebrauchsanwendung zu gewinnen, erwies sich als erfolgreich; es geschah dies aber nicht durch das Herauswerfen von Geld und Energie dass diese Leute "ausgebildet" wurden, sondern durch das Konstruiren gerade solcher Arten und Maschinensorten, welche lokalen Vorurtheilen und Gebräuchen in jeder Hinsicht gewachsen waren.

Um den Landbebauern Britisch-Indiens das Richtige bieten zu können, musste somit der Pflugbalken ungewöhnlich lang und das Zieheisen oder die Pflugschaar verhältnismässig kurz gebaut werden. Mit geringer Aenderung erwiesen sich die dahin gesendeten amerikanischen Weise die an sie gestellten Anforderungen zu verrichten und erwarben sich ausserdem grosser und bleibender Beliebtheit denn sie sind leicht, dauerhaft und tüchtig.

In fast jedem Falle wo lokale Vorurtheile gegen amerikanische Geräthe vorherrschen, erwies es sich, dass dieselben eher gegen unbedeutende Kleinigkeiten als gegen wirkliche Konstruktionsfehler gemacht wurden; es gelang auch den tüchtigen Verkäufern solche Unvollkommenheiten bald durch ihre Fabrikanten perfektiren zu lassen und waren bald in den Stand gesetzt, ihre so verbesserten Maschinen in den Markt zu bringen. Eine zeitlang beschwerten sich auswärtige Käufer dass amerikanische landwirthschaftliche Maschinen, besonders Mäh und Erntemaschinen zu leicht gebaut seien, um dauerhaft bleiben zu können. Doch erst nach langanhaltenden Versuchen vergewisserten sich die dortigen Käufer, dass die anderswo gebauten Maschinen zu klobig, zu schwer seien.

Woimmer Stärke von weniger Bedeutung war, benutzten amerikanische Maschinenbauer Holztheile, und in den Stahltheilen wurden Grösse und Gewichtsschwere der event. Spannkraft der die Maschine ausgesetzt war, gleichgebaut; in der Weise ergab es sich, dass die betreffenden Maschinen sich in jeder Hinsicht stark genug erwiesen, allen Anforderungen zu entsprechen und den besten Maschinen ihrer Art ebenbürtig zu werden; dabei wiegen sie nicht nur weniger, sondern kosten auch viel geringer als Maschinen anderer Konstruktion, oft sogar nur die Hälfte. Die britischen und kontinentalen Maschinen, die die neutralen Märkte vor Einführung amerikanischer Maschinen beherrschten, waren mit Stahl und Eisen sozusagen bepackt, abgesehen von den Extrakosten und der Klobigkeit. Theile z. B. die keiner Spannkraft ausgesetzt waren, waren aus zolldickem Eisen verfertigt. Das Resultat davon war, dass zwei, drei, ja vier Pferde oder sonstige Ziehthiere erforderlich waren, diese klobigen Maschinen zu ziehen, wohingegen eine Maschine amerikanischer Konstruktion, von leichterer Bauart, dieselbe Arbeit mit halber Thierkraft verrichte. Solche Vorzüge leuchteten den Landwirthen bald ein, und man darf behaupten, dass die landwirthschaftlichen Maschinen amerikanischer Muster die Industrie der ganzen Welt sozusagen rovolutionirt hat.

Um mit den auswärtigen Käufern in richtiger Beziehung treten zu können, hatten selbstverständlich unsere Fabrikanten tüchtige Verkäufer nach allen wichtigen Weltmärkten hinüber zu senden. Dise Herren studirten zuvörderst die im Gebrauch befindlichen Pflüge und schickten zuweilen Musterproben nach Hause, um deren Entwürfe und Machination den Maschinenbauern vorzuführen. Die Export-Verkäufer die mit ihren Erfahrungen heimischer Sorten leicht das Passende zu beurtheilen imstande waren, fanden bald, dass für heimische Zwecke bestimmte und in grosser Anzahl zu Hause verfertigte Maschinen sich, mit nur geringer Änderung, auswärtigen Anforderungen gut anpassten. In solchem Falle war der Erfolg ein prompter und sogar verhältnismässig leicht.

In anderen Fällen, hingegen, mussten neue Muster angefertigt werden, solche, welche den bestehenden Sorten auswärtiger Geräthe mehr entsprachen. Doch, selbst hier erwies sich die vielseitige heimatliche Erfahrung des Fabrikanten von ungeheuerer Wichtigkeit.

Der grösste Zuckerfichten-Wald des Weltballes fängt beim Klamath an und erstreckt sich nördlich hinaus bis an den glitzernden Gipfeln von Mont Pitt, Mont Diamond, Thielson, Scott und den Drei Schwestern, bis zum Fusse von Jefferson, die gegen 200 Meilen nördlich liegen. Es ist dies ein ungeheueres Waldreich und wird vom Wild des Tiefwaldes ausschliesslich beherrscht; es schliesst ein Gebiet von über viertausend Quadratmeilen im Umfange ein. Wer kann sich davon wohl eine Vorstellung machen! So gross, also, wie der ganze Staat Connecticut, halb so gross wie Massachusetts und dreimal so gross wie der Staat Rhode Island. Fünfhundert Quadratmeilen dieser Landstrecke wird vom schützenden Arm "Onkel Sam's" bewacht; es patrollieren dort eine Armee von Förstern während der Sommermonate die jeden Distrikt mit wachsamen Auge beschützen.

INTENTIONAL SECOND EXPOSURE

AMERICAN WIND MILLS

In studying any line of modern advancement it will be found that progress in material matters has been achieved through man's constant and successful efforts to harness Nature's great forces and bring them under the yoke of his intelligence.

As a typical example of the progressive spirit of the age, and as illustrating the results which may be achieved when science and invention join hands, the modern wind mill is a striking illustration. Centuries ago man realized in a vague way the possibilities of harnessing the wind and employing it as a servant to perform laborious tasks, but the devices constructed for this purpose were crude and primitive in the extreme. For a long time no progress or improvement was made in the clumsy and inefficient machines built for this purpose. In an age, however, when the inventive faculty of man applied itself to all forms of mechanical devices the wind engines came in for their share of attention, and the development of the machine from the heavy, lumbering, gigantic mill of the olden days to the light, strong, effective machine of to-day is the result.

As manufactured to-day, windmills may be divided into two classes: those which are used for pumping purposes only (pumping mills) and those which serve to furnish motive power to machines requiring a rotary motion (power mills).

For pumping water windmills have come into almost universal use. Farmers, dairymen, cattle-raisers and all others interested in obtaining large quantities of water, have long recognized the windmill as the most economical means for accomplishing their object and have learned to look upon it as an indispensable adjunct to their operations. Life in the rural districts has been made worth living by the advent of the modern windmill, which enables the owner of a country residence to enjoy all city conveniences and comforts in the way of baths, running water, wash stands, sinks, lawn sprinklers, etc., besides affording him protection against fire and an abundant supply of water for barn and stable use. In like manner, but at a correspondingly greater cost, private and public institutions situated in the country can have water-works of their own, which, once installed, will be entirely automatic and cause practically no expense for their maintenance. Railroads are also among the beneficiaries of wind power, their water-stations being generally supplied with water pumped by windmills.

Wherever windmills are used for any of the purposes mentioned thus far, it will be found desirable and, in fact, necessary to provide a tank (of either wood or galvanized steel), which, if not too large, may be placed inside of the windmill tower, so as to enable the windmill to pump water ahead for use during occasional calms and incidentally to obtain the necessary pressure to deliver the water at any point desired. For tanks of great capacity, special substructures are made use of, which will prove sufficiently strong to support not only the tank but also a windmill outfit placed inside of the latter. For irrigating purposes the self-regulating windmill stands without a peer, and to give an account of the wonders it has performed in this connection, would sound like a tale from the Arabian Nights. Suffice it to say that by its instrumentality arid and unproductive tracts of land (deserts to all intents and purposes) have been converted into veritable gardens of Eden and in many cases outfits used for this purpose have completely paid for themselves in the course of a single year by the increase in, and the enhanced value of, the crops produced.

Power windmills are extensively used for operating light farm machinery, such as feed grinders, corn shellers, circular saws, etc., and, if necessary, will also drive a pump by means of the proper connections. The possibilities of wind power on the farm are practically unlimited and furnish an immense field for speculation.

Established in 1854, the U. S. Wind Engine & Pump Co. rank as the oldest windmill factory in the world. Their products have been exported to every corner of the globe and the reputation of the concern has become world-wide. While primarily a windmill factory, it soon became necessary for this company to start making the many other goods used in connection with their chief line. Thus they began to build pumps, tanks and accessories at an early stage of their career, and to-day are in a position to supply their customers' wants in these lines as well as in that of windmills, which latter are made by them in sizes ranging from 6 to 40 feet in diameter, and of both wood and galvanized steel.

EXTENSIVE PLANT OF THE U. S. WIND ENGINE AND PUMP CO., BATAVIA, ILL., U. S. A.

The construction of steel towers and so-called substructures for supporting elevated tanks has long constituted one of the chief branches of their business, and has only recently caused them to increase their facilities in this line so as to cope with the ever-increasing demand for these goods. In connection with their power windmills they manufacture a line of feed grinders, corn shellers, wood saws, etc., all of which are designed with a special view to obtaining the maximum of efficiency with a minimum of power.

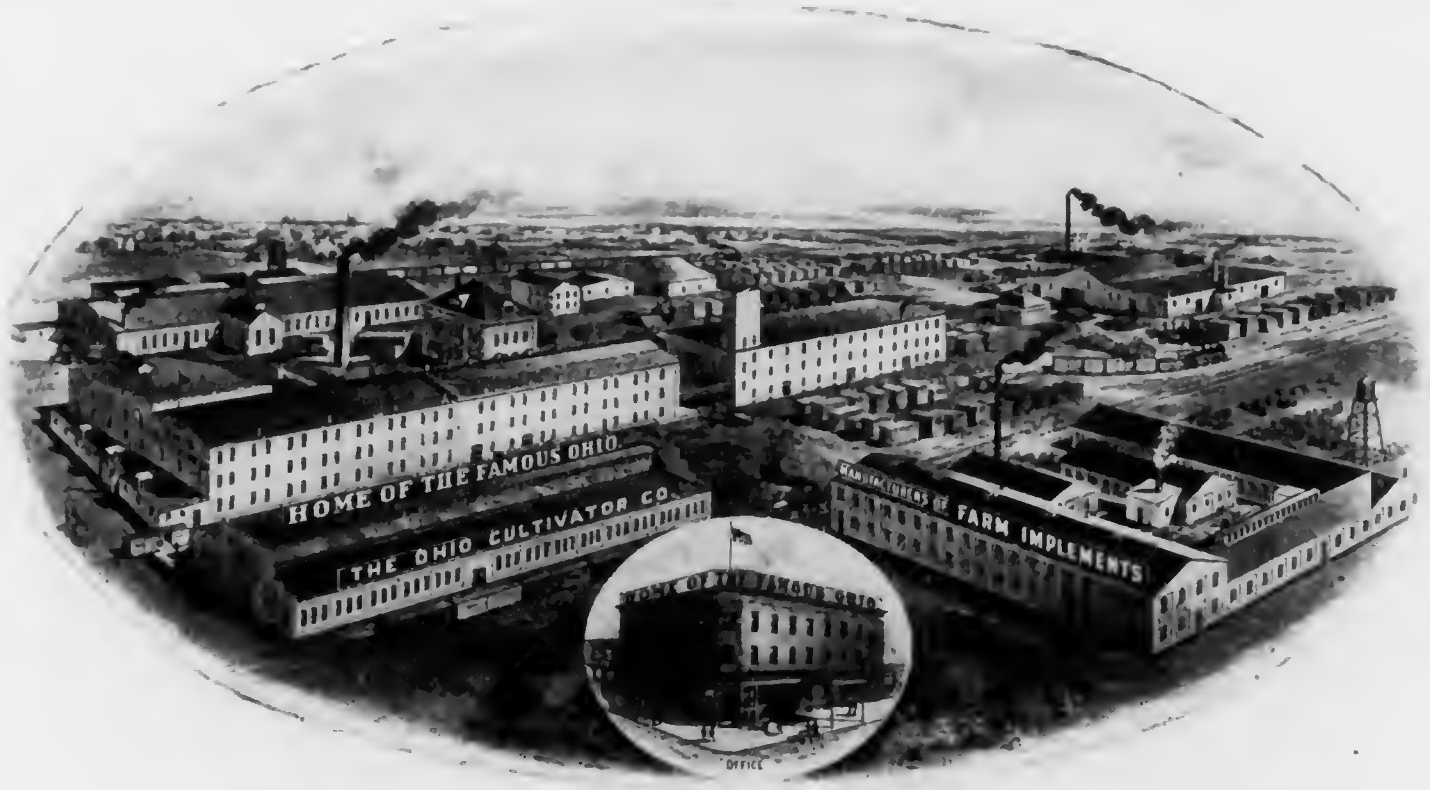
As this issue is going to press, new buildings, now in course of construction, are nearing completion and the new year will find the company better equipped than ever to serve their customers in a prompt and efficient manner. All export correspondence should be addressed to them at Batavia, Ill., U. S. A., where it will be attended to by a special department recently organized for that purpose. All inquiries will be promptly answered and business will be facilitated with the utmost care and accuracy.

STANDARD AMERICAN IMPLEMENTS

We want to call the special attention of our readers to the advertisement of the Ohio Cultivator Co., Bellevue, O., U. S. A., which appears on another page of this issue.

As an example of enterprise, progressiveness and growth, the Ohio Cultivator Co. certainly is a model. Some 25 years ago, Mr. H. C. Stahl, who is at the head of the present organization, started out with the humble means at his command, to build cultivators. He was then practically unknown out of the confines of his own immediate vicinity, and on account of slender means, was forced to confine his operation to a very small scope. He was, however, from the outset imbued with an honesty of purpose, a strong ambition and a tenacity that would brook no hindrance, and though surrounded with many adverse circumstances, he struggled bravely on to create a name and hew a fortune out of his own chosen pursuit. His honesty and uprightness and the vigor with which he worked, brought notice from financial quarters, and the young manufacturer was enabled to enlarge his operations somewhat until the virtue of his products became known. From that time on, it was clearer sailing, and the business increased step by step, as their products became known and grew in popularity, until the plant of the present company is one of the largest and most modern ones in the country devoted to agricultural implements, and they are said to turn out more cultivators than any two factories in the United States, combined, and the name "Famous Ohio" implements is known and respected to the farthest corners of our land. Quality was Mr. Stahl's aim in the beginning, quality and improvement is the watchword of the present concern, and it is quality to which they attribute their remarkable success and growth.

The company has always pursued an enterprising policy, adding new products to their list as the varying conditions of the times suggested. Their line of manufacture to-day embraces such implements and machines as cultivators, disc and lever harrows, land rollers, pulverizers, garden tools, planters, lister tools, shapes, plows, hay presses, corn huskers, etc. Their latest enterprise was the purchase of the entire plant and business of the Bissell Chilled Plow Works, of South Bend, Indiana, which deal was culminated on July 1st., 1905. This transaction gave the company control of an old and well-established business. The Bissell chilled plows have long been regarded as the standard of chilled plow manufacture, and under the able management of their present owners, they will undoubtedly soon rank among, if not the first in number, as well as reputation. The company have already removed the machinery, etc., from South Bend to large and commodious quarters at Bellevue, and are fully equipped to take care of all orders for Bissell chilled plows.


HOME OF THE FAMOUS OHIO.
THE OHIO CULTIVATOR CO.
MANUFACTURERS OF FARM IMPLEMENTS
OFFICE

OHIO CULTIVATOR CO., BELLEVUE, O., U. S. A.

It is with pride that we number the Ohio Cultivator Co. among the list of our regular advertisers, and judging from the past, the popular demand their products have created for themselves, their present thriving business, which they so richly deserve, and the honesty and integrity of the company itself, we cannot help predicting great things for them in the future. We take pleasure in extolling the virtues of their products, knowing them, from our own personal experience, to be men of their word.

We can most heartily recommend the Ohio Cultivator Co. to any of our readers who may be in need of any goods, such as are made by them, feeling perfectly free to assure them of the fair and square treatment, which has all along been the reputation of the above named firm.

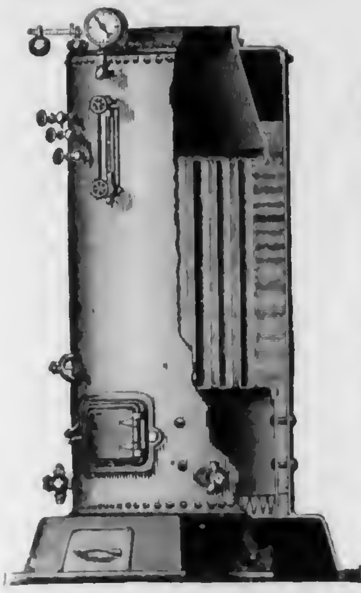
PREHISTORIC INHABITANTS

The oldest eggs in the world are owned by the Museum of Natural History in New York. They were laid by large turtles four or five millions of years ago, and their appearance indicates that they would not be good to eat. In fact, they are fossils, the largest of them being an inch an a half in diameter.

These eggs were dug out of the so-called Bridger beds, in the southwest corner of Wyoming—a formation which has been found to contain a greater number of species of ancient turtles than are discovered anywhere else in the world. In the same beds, by the way, something like two hundred species of mammals have been found fossil, including some of the earliest horses with three or more toes.

In the rocks of Wyoming, Colorado, South Dakota and New Mexico are discovered the fossil remains of the ancestors of many species of modern American turtles. They were among the oldest reptiles on this continent, and were contemporary with the crocodiles which are known to have been so numerous in the epoch called by geologists the Middle Trias. In those happy days there were multitudes of crocodiles in Pennsylvania and in the Connecticut Valley.

Turtles closely resembling the modern giant land tortoises of the Galapagos Islands were plentiful in those times in this part of the world. In truth, reptiles of this order seem to have changed less with the progress of the ages than any other animals, and to-day they are pretty much what they were five millions of years ago. The ancient tortoises of South America seem mostly to have been unable to draw their heads back into their shells—a noteworthy peculiarity of modern turtles below the Tropic of Cancer.



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Engines and Boilers
From 3 to 50 horse-power, in a variety of sizes and styles specially well adapted for foreign trade. Importers in position to handle such goods will find it to their interest to get our catalog. Prices and full information furnished promptly on application.
James Leffel & Co.
Num. 138
Springfield, Ohio, U. S. A.

WIR BAUEN
Maschinen und Kessel
Von 3 bis 50 Pferdekräften in einer Auswahl von Grössen und Sorten, die sich besonders für den auswärtigen Handel bestens eignen. Einfuhrhändler welche in der Lage sind solche Waaren zu führen, dürften finden, dass es sich in ihrem Interesse erweisen wird, sich unsern Katalog, der Preise, volle Beschreibung, usw., enthält, kommen zu lassen. Derselbe wird franko auf Verlangen sofort versandt.
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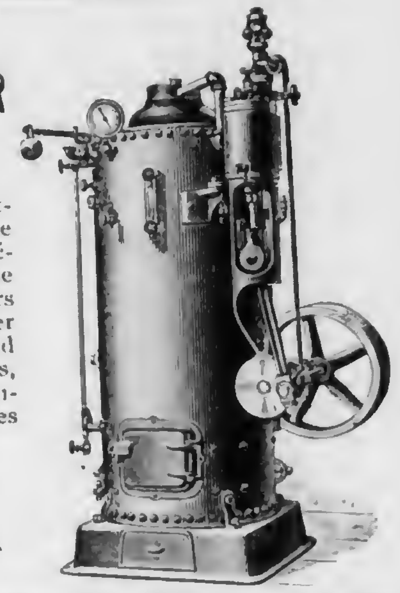
Springfield, Ohio, U. S. A.

Nous Construisons
DES MACHINES À VAPEUR ET DES CHAUDIÈRES
de la force de 3 à 50 chevaux-vapeurs et dans une variété de dimensions et de genres spécialement adaptés à l'industrie étrangère. Les importateurs qui ont occasion de s'occuper de ces articles trouveront grand intérêt à obtenir nos catalogues, nos prix et de complètes informations qui sont fournies promptement sur demande.
James Leffel & Co.
Num. 138
Springfield, Ohio, U. S. A.



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Wagons, Ambulances, Trucks, Express, Luggage Wagons and Coaches
We Make a Specialty of Export Work, Building Only the Highest Grade
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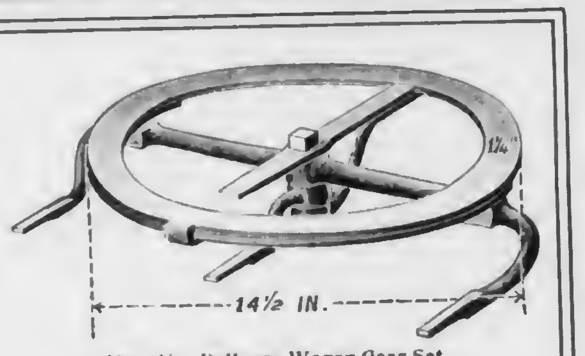
Mfg. Co.
Mechanicsburg, Pa.
U. S. A.
Manufacturers of all kinds of
CARRIAGE HARDWARE



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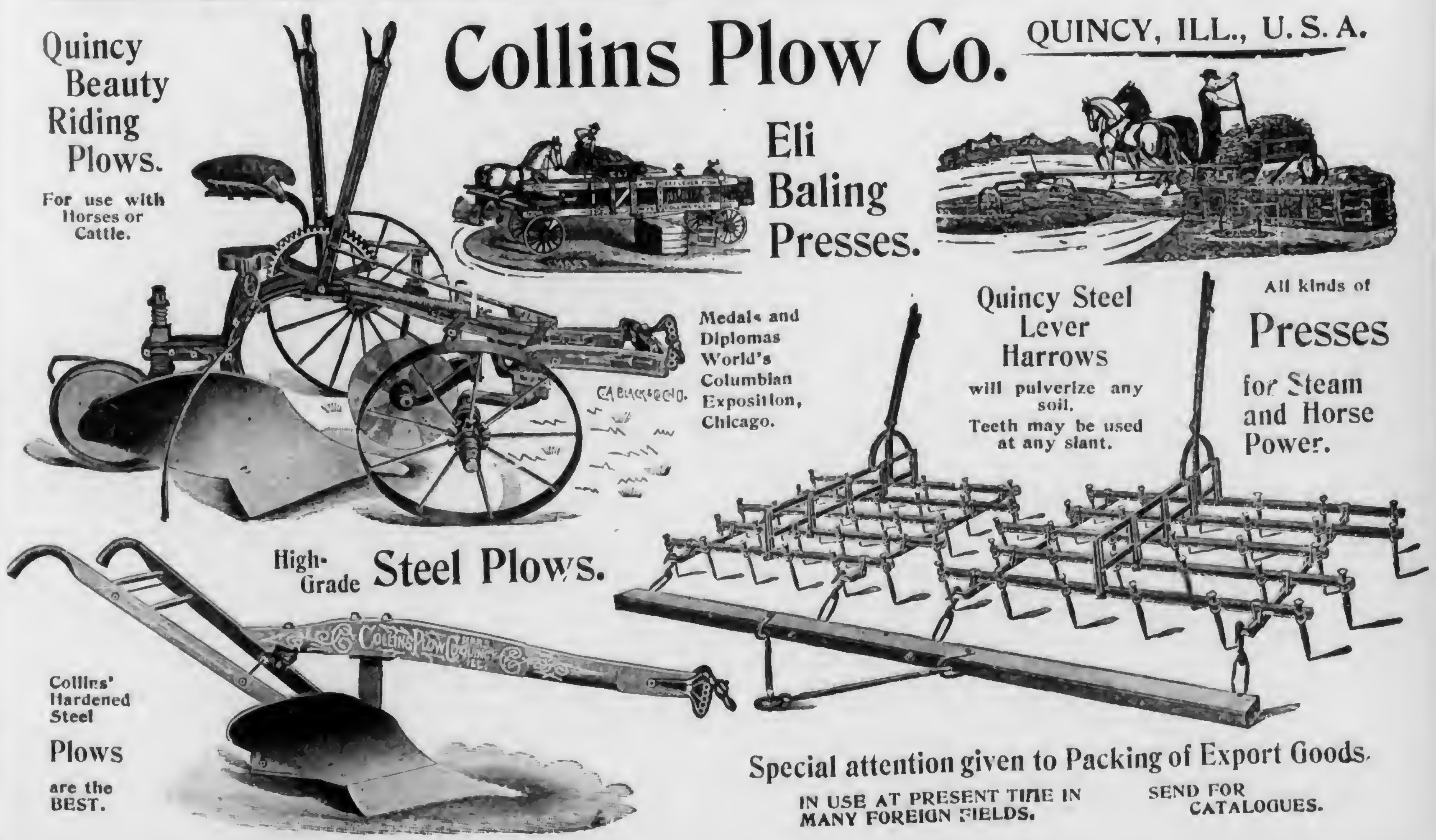
For light and medium weight delivery and light express wagons.
It is well adapted for heavy city use or for rough country roads.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Quincy Beauty Riding Plows.
For use with Horses or Cattle.
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IN USE AT PRESENT TIME IN MANY FOREIGN FIELDS.
SEND FOR CATALOGUES.

THE "STONEBREAKER" CONTINUOUS-FEED HOMINY MILL

The accompanying illustration is the smallest size "Stonebreaker" hominy mill, which takes the corn from the sheller and finishes the hominy ready for the market without the assistance of any other cleaning, separating or polishing machinery.

The "Stonebreaker" Continuous-Feed Hominy Mill, made by Sprout, Waldron & Co., Muncy, Pa., U. S. A.

It is continuous feed and continuous in discharge, thus running with an even power at all times, and doing away wilth the uneven motion and surging, which it is claimed makes the charge and automatic mills so unpopular. Where hominy mills are fed automatically, the charge when being let in naturally decreases the motion of other machinery run in connection with them; then when the charge is let out all machinery runs at a high rate of speed, which necessarily prevents their doing satisfactory work. With all other hominy mills it is claimed there is so much gearing used, the friction being great, that the power required to drive them is almost four times that needed for this machine.

This hominy mill makes three separations, gradings, hominy blowings and feed, all three at one time and continuously. The machine is built so that the millers can use it as a degerminator. Use all the gradings, and what you may need of the first run of the hominy, in the manufacture of pearl meal, grits and corn flour. Then to get the bright polish and finish you re-run the hominy only from the first run, which passes through the mill very rapidly. If you do not wish to use the mill as a degerminator, there are slides so arranged in the sides of the discharge end of the concave that you can lower them and finish the goods at one run. You can feed in as much or as little corn as desired, getting only the best result either way.

The material used in the construction of this machine is of the best the market affords. The splitters and bullers are of the best steel and hardened through a special process, making them wear longer without sharpening than the blades used by others. All parts of the machine are put together with bolts and screws, and can be taken apart without damaging the mill in any particular. The force of wind can be regulated in a moment's time, allowing you to clean out as much or little stuff from the hominy as desired. Millers who do custom work will appreciate the profit of corn milling, especially when they can purchase one machine at such little cost that will do the work of others requiring at least $1,000 worth of other machinery.

The manufacturers of this mill, Sprout, Waldron & Co., Muncy, Pa., U. S. A., make a full line of up-to-date milling machinery, and anyone who is at all interested in this line will find that the catalogue issued by the company is a most valuable and informing book on the most modern and improved methods. This is in a class of machinery where improvements mean a saving of thousands of dollars in a short time, and we urge our readers to send for this catalogue, which will be sent free of charge.

THE "STAR" WINDMILLS

On this page is shown an excellent view of the plant of the Flint & Walling Mfg. Co., located at Kendallville, Ind., U. S. A. Hundreds of workmen are kept busy throughout the year turning out "Star" windmills for the American and foreign markets.

By careful and shrewd management this company enjoys the distinction of having the largest, best equipped and most modern plant in the world producing exclusively windmills and water supply goods. Their excellent facilities enable them to fill promptly all export orders for any part of the world. The preparation and packing of all goods for export receives their very best attention. Instructions as to marks are carefully carried out. They fully understand what is necessary in this respect from their long experience in catering to the requirements of the export trade.

For various purposes and particularly the pumping of water, the windmill is economical and thoroughly reliable. The interest throughout the world in the use of windmills has greatly increased in the last few years. That "Star" windmills give perfect and lasting service is conceded by dealers and individual buyers everywhere. These mills are now in use in every land where civilization exists.

Skillful workmanship and strictly highgrade material make "Star" windmills eminently satisfactory to the trade. They are built on scientific principles with the advantage of many years practical experience.

Those interested should write for booklets in English, Spanish, French or German, which give full information about these goods. Address Flint & Walling Mfg. Co., Kendallville, Ind., U. S. A.

FLINT & WALLING MFG. CO., KENDALLVILLE, IND., U. S. A., MANUFACTURERS OF THE "STAR" WINDMILLS

WE MAKE THESE AND EVERYTHING IN
Trucks, Hand Carts, Steel and Wood Barrows, Coal Cars,
COAL DEALERS' SUPPLIES, RUBBERED TRUCK WHEELS, ROLLERS, Etc., Etc.
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The John Deere Plow Co.
For more than sixty years, the
Standard Steel Plow of the World.
MADE IN AMERICA.
Exported in large numbers to all parts of the Globe. Manufactured in all sizes and for all purposes, from a seven-inch walking plow to an entire gang, turning nine feet of soil at a time.
The John Deere Plows represent the highest perfection in the art of plow making. They are constructed upon strictly scientific principles, of the best material afforded by the American market, by artisans of the highest skill in this line of manufacture, and in the largest Plow Factory in the world.
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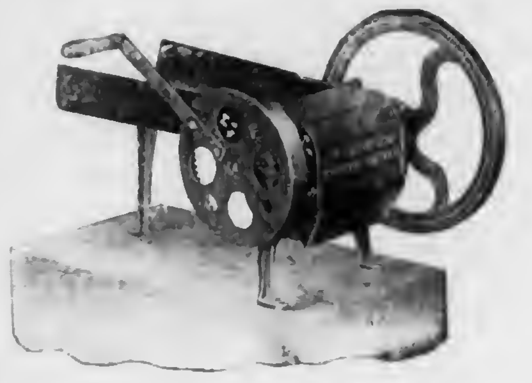
JOHN DEERE WALKING PLOW
Boxed compactly for foreign shipments, and in most convenient form for handling.
We solicit correspondence from importers, either direct or through American forwarding houses.
The styles here shown are among the most popular for export trade.
Catalogues and prices on application to
DEERE & CO. PLOW MANUFACTURERS MOLINE, ILL., U. S. A.

MACHINE FOR POULTRY RAISERS

The new clover cutter which we illustrate on this page is a new machine recently placed upon the market by the Silver Mfg. Co., Salem, O., U. S. A.

In order to meet a widespread demand for such a machine, it has been specially designed for cutting clover, alfalfa, etc., for feeding poultry. The need of just such a machine has been felt for some time as it has been clearly demonstrated by poultry raisers that cut feed is one of the necessities in successful poultry raising.



Machine for Poultry Raizers, made by the Silver Mfg. Co., Salem, O., U. S. A.

For the purpose of insuring easy running the machine has been provided with a heavy fly wheel and by actual tests it will cut faster than machines costing about twice the money.

Another very important feature in the construction of this clover cutter is that the cutting plate is adjustable, allowing the operator to keep the cutting device in the best possible condition at all times.

Another reason why the machine is very easy to operate is that the throat of the machine is wider than any other cutter of the kind, giving more room to spread out the clover, which makes it cut much easier than machines with a narrow throat.

This clover cutter has four 8-inch solid center spiral knives and cuts ⅛ inch in length. The length over all is 24 inches; length of box, 18 inches; width of box at largest end, 10 inches; width of box at throat, 8 inches. It will cut a bushel of clover in ten minutes with ease. As may be seen in the illustration, it is intended to be mounted on a box or bench the proper height for the convenience of the operator.

The manufacturers make a specialty of export trade and all inquiries will be promptly and accurately answered. The firm invite correspondence and those interested should write to the Silver Mfg. Co., Salem, O., U. S. A.

THE MYERS PUMPS AND HAY TOOLS

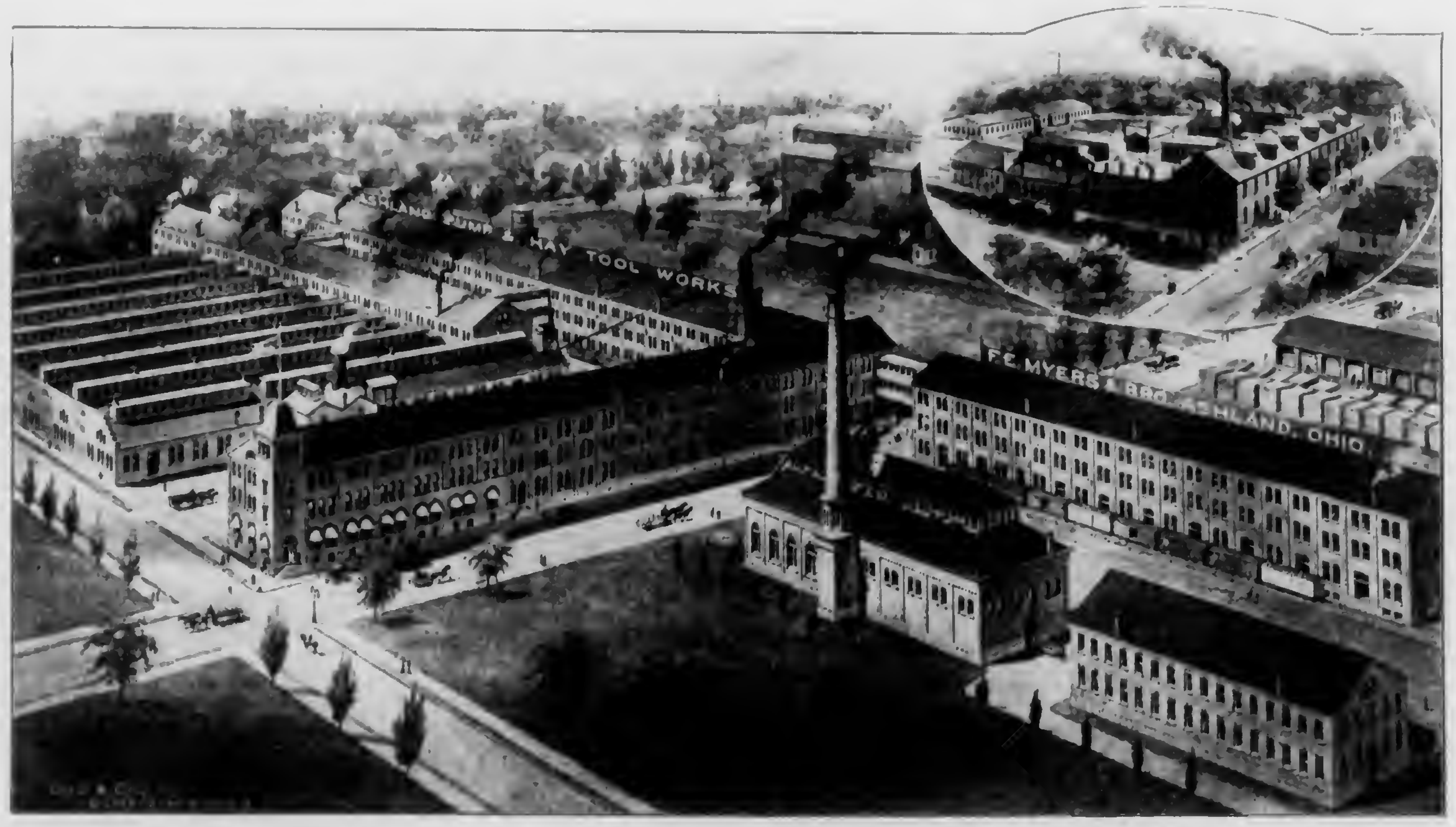
Our readers will be interested in a brief description of a great American industry, the largest pump and hay tool works in the world, the house of F. E. Myers & Bro., Ashland, O., U. S. A. As may be seen from the illustration of their plant, the factory buildings of this great institution occupy a large extent of ground. A few figures in this connection will be of interest.

The works of this firm cover a total of 350,000 square feet of floor space, or to represent it in ground space, six acres would be required to furnish them with the shop room which they now have. Their business annually goes into seven figures, and their pay-roll amounts to $300,000.00, or $25,000.00 every month of the year; 500 men are given employment, and their list of customers will aggregate a total of 15,000 business houses throughout the world. The output of this great plant in one day is astonishing. The day's product of this great factory and force of workmen includes over two miles of door track and 700 door hangers, 300 hay unloaders, 500 hay forks, and 600 pumps, 1,200 pulleys, store ladders, hay rack clamps, etc. These are amazing figures, and one may instinctively ask "Where do they go to?"

They have in the United States five branch distributing houses, an export house in New York, over 350 jobbing houses, and over 30 traveling salesmen who visit all sections of the country.

In France, Italy, England, Russia, Norway, Sweden, South Africa, Denmark, Austria, South America, and Australia, they have agencies, so that the sale is worldwide. In all the length and breadth of the world the name of Myers is known in pumps. Wher--ever civilization has secured even a passing foothold the Myers trade mark is a well recognized emblem of merit and usefulness.

Those of our readers who desire to make themselves familiar with the best that America produces in the line of pumps and hay tools, should lose no time in sending for the catalogue of this concern, which may be had by addressing F. E. Myers & Bro., Export Office, B-21, Produce Exchange, New York, U. S. A.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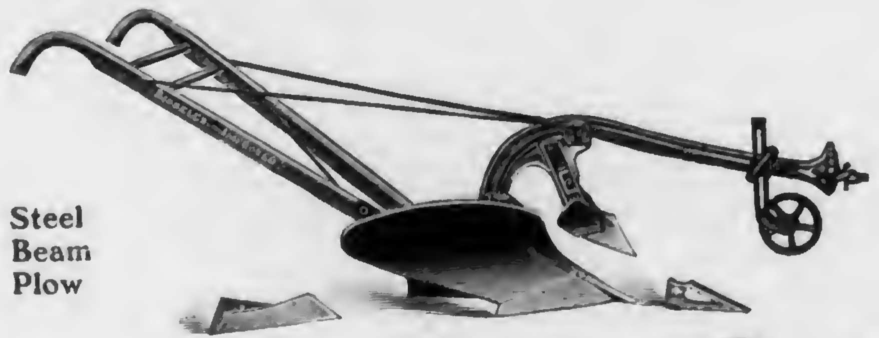

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IMPROVEMENTS IN FARM MACHINERY

One of the most prominent features in the development of American agriculture is the great number of improvements that have taken place in the methods and machines. They have reduced the amount of human labor required to produce a given quantity of crops and to cultivate given areas of land, and are largely responsible for the changing of local markets into world markets for cereals, cotton, animal and dairy products.

The first settlers that came to this country settled at Jamestown, Va. They had very few implements in the way of farming tools. In fact, their entire lot consisted of a hoe, an ax, and a mattock, and with this equipment they cleared the land and raised their first crops.

In taking up the study of farm machinery one of the most important tools, and one which has undergone more study and experimenting, is the plow. In 1637 there were only 37 plows in Massachusetts Bay Colony, and for 12 years after the landing of the Pilgrims there were no plows at all on the farms and the soil was dug up with rude hoes and mattocks. After plows came into use it was the custom for years for a person owning a plow to do all of the plowing in the community, and "towns" as they were called, then kept these plows in repair and paid bounties to those persons owning them.

These old plows were certainly picturesque from the description of them and their work. What was known as the "old colony plow" was ten feet long and had a four-foot landside and the furrows it left stood up like the ribs of a lean horse. It required eight or ten oxen to pull it, a man to ride the beam and another to follow along with a hoe and dig up the places it missed.

The first patent taken out was for a cast-iron plow. In this the mould board, share and landside were all in one piece, but this was not popular and was not accepted by the farmers, because, as they said, it poisoned the soil and made the weeds grow.

Thomas Jefferson wrote a treatise on the plow in 1798, in which he gave the results of his careful study of the curvature of the mould board so as to lessen friction and yet turn a good furrow; and it is said to have taken 45 years of inventive genius and observations by the farmers to arrive at a conclusion of the best shape for a plow.

The Oliver chilled plow of 1870 was one of the first suitable plows made, and was later followed by sulky plows, gang plows, plows and harrows combined, side hill plows, vineyard plows, beet plows, disc plows, and lastly the steam gang plow combined with seeder and harrow.

As a result of the improvement of the plow, speaking only of the latest ones, the cost of production of wheat was reduced from four cents per bushel to one cent. Time required of human labor for fitting soil to raise a bushel of wheat was reduced from 32.8 minutes to 2.2 minutes and animal labor was reduced from 57 minutes to 1½ minutes.

Another line of implements which has taken long years of difficult work to perfect is the binders, including the reaping machines. The farmers no longer have to cut their grain with the sickle or cradle and rake it and bind it by hand and then thresh it out with flails, but can do the whole operation of cutting, threshing and sacking of grain at one time. Nor do they have to cut the grass with a scythe, rake it by hand, load and unload it by hand, but have machinery to cut, rake and load and unload without the amount of manual labor that was once necessary.

The oldest method of reaping grain by hand was too slow for America, and in 1833 Hussey, of Cincinnati, O., patented the first successful reaper. This machine was introduced into New York and Illinois in 1834; into Missouri in 1835, and into Pennsylvania in 1837.

This machine was followed by McCormick's reaper in 1834, but neither was popular until 1845, when 150 were built at Cincinnati, and the next year 300 more were built.

A general trial of all reapers was given at Geneva in 1852 and another at the French Exposition in 1855. In the latter trial one English, one French and one American machine took part, and the results were greatly in favor of the American machine.

In all of the machines built up to this time the grain was left on the ground unbound; but in 1856 Yost secured a patent for a cord binder which was operated by an attendant. This was followed by a number of other binders, some of which bound the grain with cord, some with wire and one bound with grass.

The success of the self-binders depended upon the knotter, of which only two successful ones were ever built. One by Walter A. Wood and another by Appleby and known as the Appleby binder.

The self-binder was followed by the header, a machine that only cuts the heads of the grain, and this was followed by the machine that cuts threshes and sacks the grain, used either with horses or traction engines and is pushed instead of pulled. When horses are used it requires from 30 to 36, cutting from 60 to 125 acres, or from 1,700 to 3,000 bushels per day.

The mower was developed right along with the reaper; in fact, they were one machine for a number of years and Hussey's machine is the real foundation of the mower.

The first practical mower was built by William Ketcham and was later followed in 1856 by one built by Lewis Miller. This machine contained all of the principles that exist in the successful machines of to-day, and our present machine is only a development and perfecting of this type.

The corn harvester is another machine which has played a very important part, especially in the corn belt. This machine needs no description, for its improvements have all taken place in the last few years and have been witnessed by all.

The old method of cutting corn with the knife was followed by the sled cutter, and this was followed by the binder, and the binder is now being replaced by the machines which both cut and shock the corn.

Another very important thing has been the development in the methods of planting corn. At first corn was dropped by hand and covered with a hoe. Later ground was furrowed out, corn dropped by hand and covered by a light single shovel plow called a "skip jack." This was replaced by a double shovel plow called a "straddle buck." In this method a shovel ran on either side of the furrow and covered the corn. These methods were followed by the spud or jobber and later by the single one-horse drill that planted one row at a time.

The single drill was followed by the two-horse planter which planted two rows at a time and either drills the corn or checks it.

The harrow has been improved to a vast extent. The first harrow used in this country consisted of only a brush dragged over the ground. This was followed by the wooden frame with wooden teeth; later by one with iron teeth and later by a steel-framed one with steel-pointed teeth. Various types have been developed since then, the disc harrow, the smoothing harrow and various forms of pulverizers.

Seeding is not only done more rapidly and easier by the improved drills and seeders, but the grain is sown much evener and is put in the ground to a more uniform depth.

Threshing is also done easier and better and with a less expenditure of time and labor than formerly. The first threshing machine was patented by Pitt in 1855. This was followed later by a machine with straw stacker attached and later by the self-feeding and band-cutting machine which threshes, weighs and sacks the grain, and stacks the straw by wind.

The list of farming implements is entirely too large to take each class up in detail, and I have only attempted to tell of the most important, but will give a list of some of the remaining classes.

All of the smaller implements were formerly made at home, and to a great extent were made of wood, but are now made in factories. Other large implements that are common are the potato planter and digger, tobacco planter, hayrake, tedder, loader and forks for unloading and mowing, corn huskers, feed and ensilage cutters, manure spreaders, all of the different types of farm wagons and vehicles, and many others of which we have neither time nor room to mention.

As to the rank of this country in the manufacture of farming implements and machines, it excels in both quality and numbers.

Everywhere in this country mechanical contrivances have largely supplanted human labor in many respects or has improved applications of labor and increased the products of agriculture, reducing the cost of production and increasing the farmer's income, and has made his life an easier one than it was before.—George a Crabb, in *The Agricultural Student.*

The male sex is in the majority in our country by some 1,638,321, according to a recent census bulletin. In some of the States, however, the women exceed the men in number—notably in the District of Columbia, Massachusetts and Rhode Island. Usually men are in excess in sparsely settled communities and women in thickly populated regions; cities, for example, as a rule, have more females than males. In the later years of life the women exceed the men, which seems to indicate that they are longer lived. In the period from sixteen to twenty-five years of age also the reports show them to be in excess.

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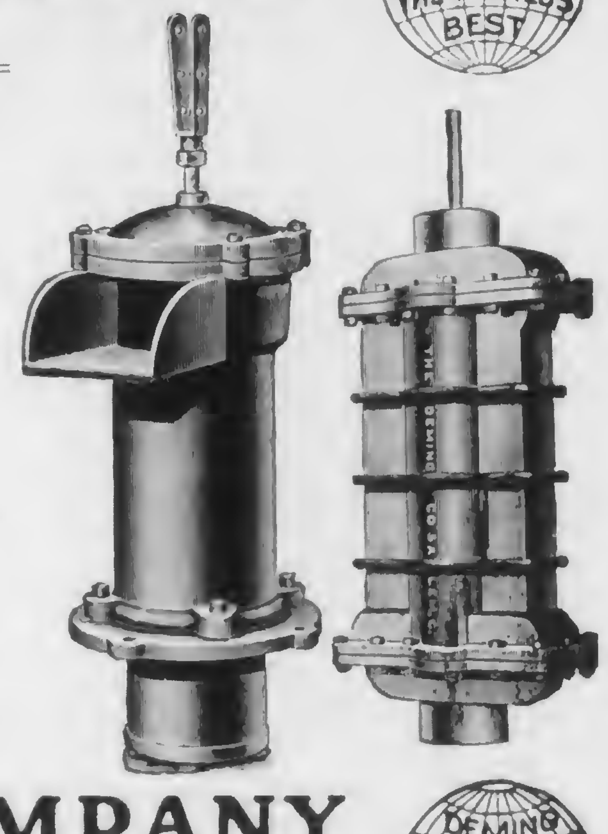

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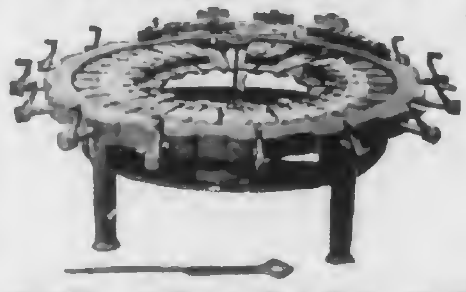

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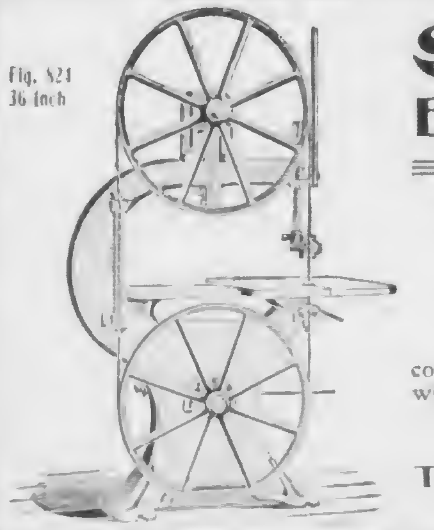

Fig. 821
36 inch

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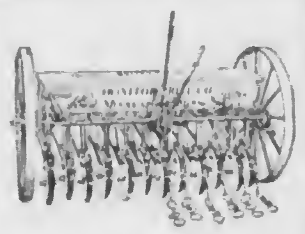

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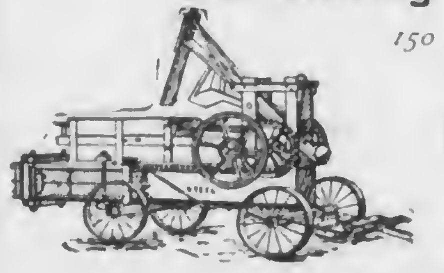

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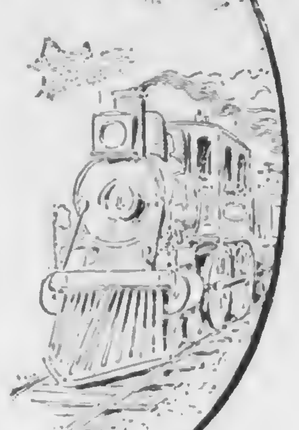

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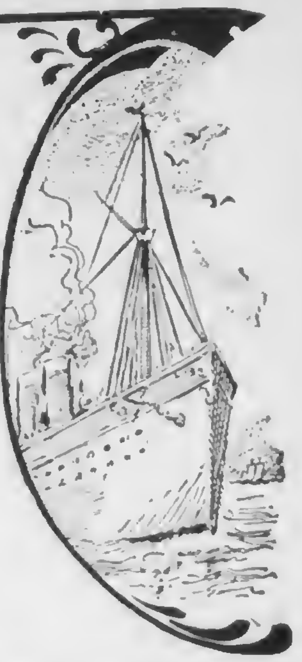

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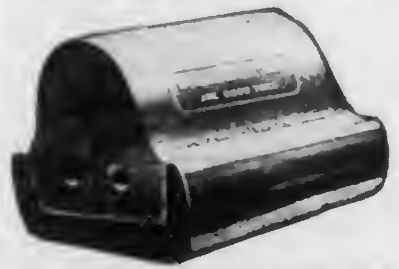

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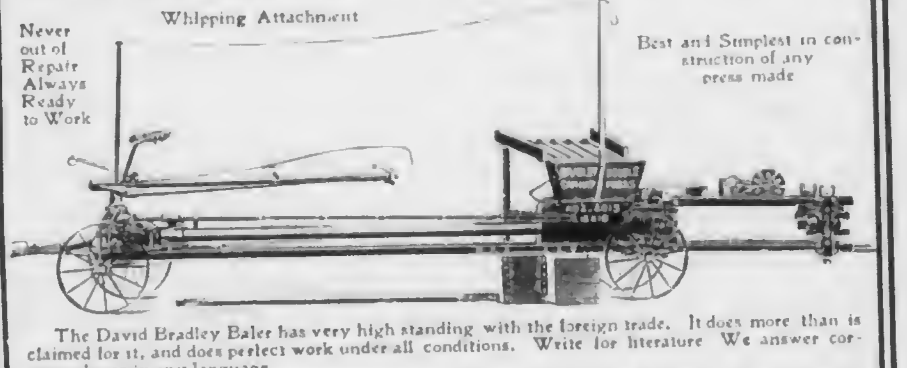
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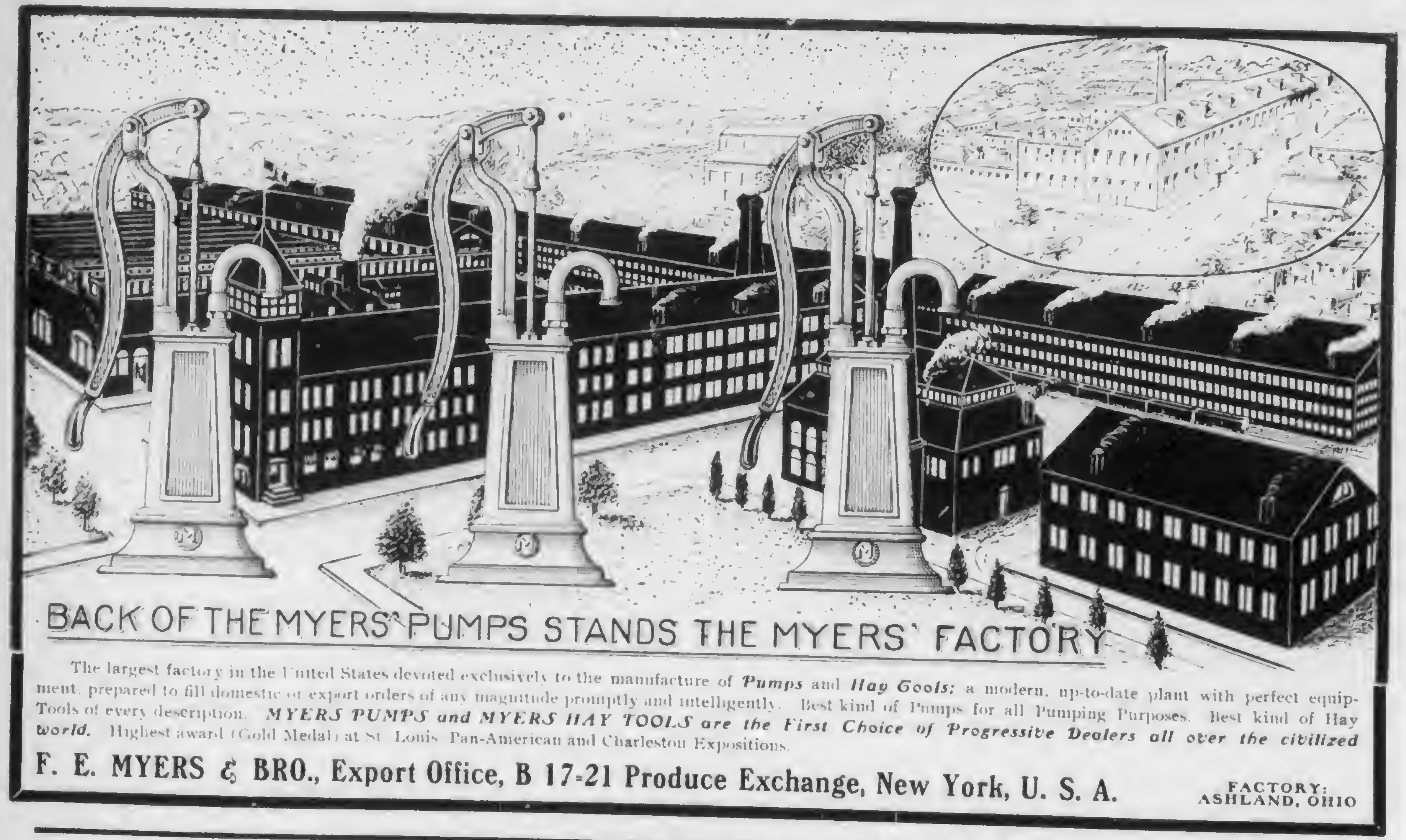
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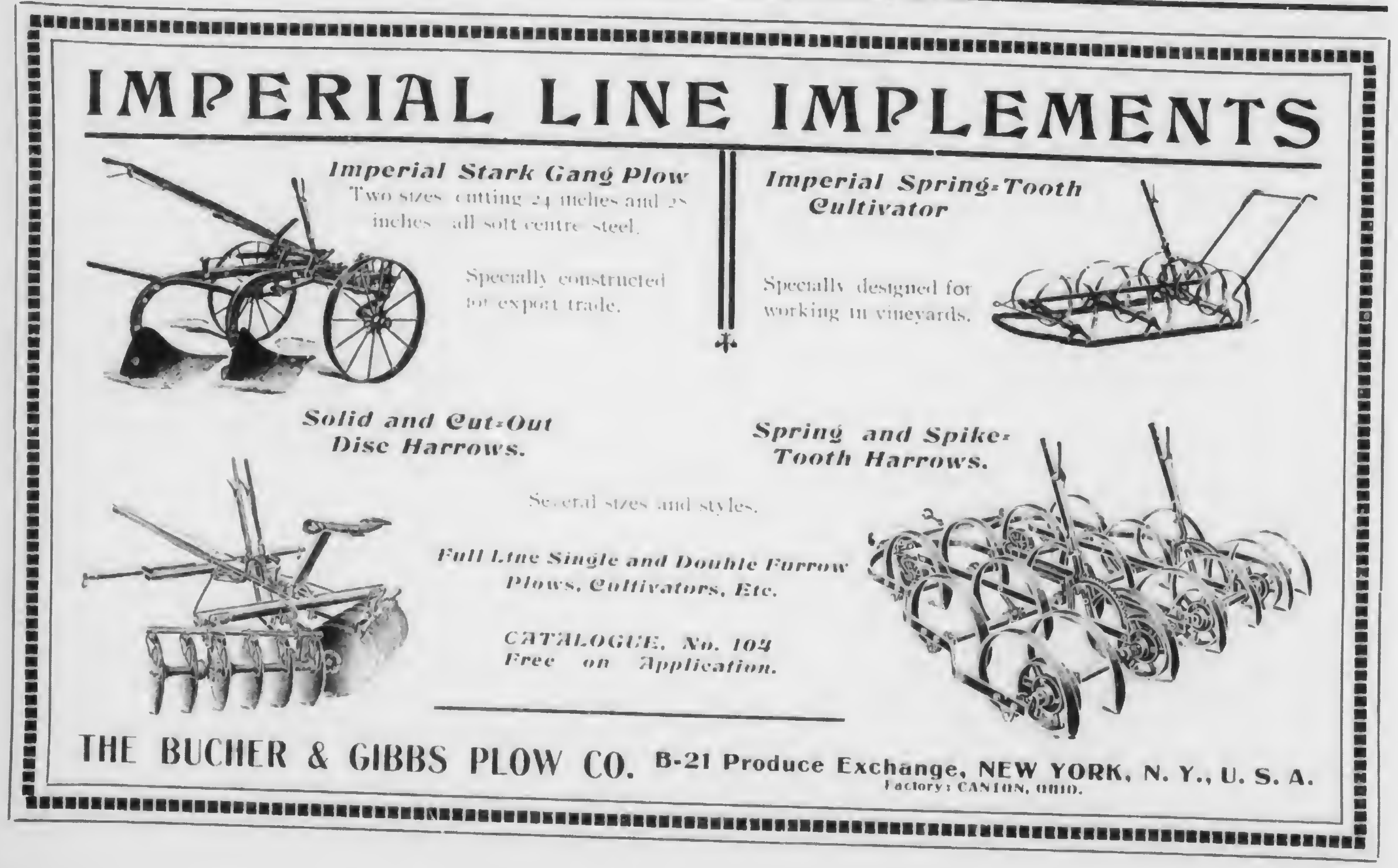
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Les maisons ci-dessous et les produits mentionnés ont été classés dans cet ordre pour la commodité des acheteurs de langues anglaise, française, espagnole et allemande. Ces établissements sont parmi les principaux des Etats-Unis, ils sont absolument sérieux, ils possèdent de grandes facilités, sont prompts en affaires. Ils connaissent à fond le cemmerce d'exportation et donnent tous leurs soins à l'exécution des commandes qui leur viennent de l'étranger. Ils conservent une collection de l'EXPORT IMPLEMENT AGE dans leurs bureaux, et la simple mention de ce journal stimulera davantage encore, si possible, leur zèle et leur promptitude à obliger leurs clients. L'EXPORT IMPLEMENT AGE, de son côté, donnera une prompte attention aux demandes de ronseignements sur machines et instruments agricoles américains, que peuvent lui adresser les acheteurs de l'étranger. Ecrire dans la langue que l'on préfere.

Directorio para los Compradores.

Los nombres de los artículos que fabrican las firmas ó casas mencionadas á continuación se dan, para conveniencia de los compradores, en los idiomas inglés, francés, español y alemán. Esos establecimientos, que se cuentan entre los principales de los Estados Unidos, están completamente acreditados, son dignos de toda confianza y tienen las mayores facilidades para ejecutar y despachar con prontitud todos sus negocios. Conocen á fondo el comercio de exportación y atienden con el mayor esmero à todos los pedidos que reciben del extranjero. Los números del EXPORT IMPLEMENT AGE se coleccionan en sus oficinas, y toda referencia á esta revista es un incentivo para atender con mayor prontitud aun á vuestros requerimientos. Todos los informes que pidan los compradores del extranjero serán suministrados á la mayor brevedad por esos fabricantes sobre la maquinaria agrícola é instrumentos de labranza americanos. Escribidles en cualquier idioma que prefiráis.

Firmen-Verzeichnis für Käufer.

Die Erzeugnisse der unten genannten Firmen sind für die Bequemlichkeit ausländischer Käufer in englischer, französischer spanischer und deutscher, Sprache hier wiedergegeben. Genannte Etablissemente gehören zu den bedeutendsten in den Vereinigten Staaten; sie sind in jeder Weise zuverlässig, besitzen ausgedehnte Facilitäten und erfreuen sich eines ehrenvollen Rufes. Alle von ihnen unternommenen Geschäftstransaktionen werden in promptester Weise zur Ausführung gebracht. Jedes hierin genannte Haus ist mit dem Exporthandel wohl vertraut und um auswärtige Aufträge eifrig bemüht. Das EXPORT IMPLEMENT AGE wird von all diesen Firmen gelesen, dient ihnen sozusagen als Informations-Register und dürfte somit eine Angabe dieses Journals bei event. Waarenbestellung nur zur Anregung grösserer Promptheit dienen, um p.p. Käufern in bestmöglicher Weise entgegenkommen zu können. Jede auswärtige Anfrage hinsichtlichamerikanischerlandwirthschaftlicher Maschinen und Geräthe wird nicht allein prompte, sondern auch stets sorgfältige Aufmerksamkeit erhalten. Interessenten können sich jeder beliebigen Sprache zur Korrespondenz bedienen.

Ambulances
Carros de hospital
Krankenwägen (Ambulanzen)

Baling Presses (Hay, Straw, Etc.)
Presses à foin, paille, etc.
Prensas de Embalar (Heno, Paja, etc.)
Ballen Pressen (für Heu, Stroh, u. s. w.)

Bradley Mfg. Co., David, Bradley, Ill. 1
Collins Plow Co., Quincy, Ill. 29
Ertel Co., George, Quincy, Ill. 6

Beet Implements (Planting, Cultivating and Harvesting)
Betteraves (Instruments pour la culture des)
Instrumentos para el Cultivo de la Remolacha (Sembradoras, Cultivadoras y Cosechadoras)
Rübengeräte (zum Pflanzen, Pflügen und Ernten)

Moline Plow Co., Moline, Ill. 6

Binders, Self (Wheat, Rye, Oats, etc.)
Lieuses Automatiques (Blé, Orge, Avoine, etc.)
Agavilladoras Automáticas (Trigo, centeno avena, etc.)
Selbstbindemaschinen (für Weizen, Roggen, Hafer u. s. w.

Boilers.
Chaudières.
Calderas.
Kessel.

Leffel & Co., James, Springfield, Ohio 29

Bolts and Nuts.
Boulons et écrous.
Pernos y Tuercas.
Bolzen und Muttern (Mutterbolzen)

Columbus Bolt Works, Columbus, Ohio 36

Brakes (Vehicle)
Retrancas (Vehículo)
Frein (de Voiture)
Bremsen (für Fahrzeuge)

Potter Co., The Morgan, Fishkill on Hudson, N. Y. . . 3

Carriages
Voitures
Carruajes
Kaleschen und Wagen

Dapson & Wolf, Oneida, N. Y. 4
Studebaker Bros. Mfg. Co., South Bend, Ind. 36

Carriage Cloth
Wagentuch
Paño de carruaje
Drap de Voiture

Fairfield Rubber Co., The, Fairfield, Conn. 5

Carriage Materials
Articles pour voitures
Materials for Carriages
Wagenmaterial

Carts (Riding)
Charrettes (à siège)
Carretones (de Montar)
Frachtkarren (Reitkarren)

Dapson & Wolf Oneida, N. Y. 3

Cider and Wine Presses
Pressoirs à vin et à cidre
Prensas para Hacer Cidra y Vino
Kelterapparate für Wein und Apfelwein

Lansing Wheelbarrow Co., Lansing, Mich. 29

Clothes Washing Machines
Linge (machines à laver le)
Máquinas de Savar Ropa
Wäsche Waschmaschinen

"1900" Washer Co., Binghamton, N. Y. 35

Coal Cars
Charbon (wagons pour)
Carros para Carbón de Piedra
Kohlenwaggons

Lansing Wheelbarrow Co., Lansing, Mich. 29

Coal Shutes
Charbon (Dalles à)
Canales para Descargar Carbon de Piedra
Kohlen Lade-Rinnen

Lansing Wheelbarrow Co., Lansing, Mich. 29

Corn Crushers
Mais (Concasseurs de)
Trituradoras de Maiz
Mais Zerquetschmaschinen

Sprout, Waldron & Co., Muncy, Pa. 8

Corn Harvesters
Mais (Moissonneuses de)
Cosechadoras de Maiz
Mais Erntemaschinen

Standard Harrow Co., Utica, N. Y. 8

Corn Huskers and Shredders
Mais (Instruments à enlever et à déchirer les bractées du)
Desgranadoras y Picadoras de Maiz
Mais Enthülsemaschinen und Auswerfapparate

Bradley Mfg. Co., David, Bradley, Ill. 1

Corn Planters (Hand)
Mais (Semoirs de, à main)
Sembradoras de Maiz (A Mano)
Maispflanzer (für Handbetrieb)

Ohio Cultivator Co., The, Bellevue, Ohio 31

Corn Planters (Horse)
Mais (Semoirs de, à cheval)
Sembradoras de Maiz (para Caballo)
Mais Pflanzmaschinen (für Pferdebetrieb)

Bradley Mfg. Co., David, Bradley, Ill. 1
Moline Plow Co., Moline, Ill. 6

Corn Shellers (Hand)
Mais (Egrenoirs de, à main)
Descascaradoras de Maiz (de Mano)
Mais Pflanzmaschinen (für Handbetrieb)

Marseilles Mfg. Co., Marseilles, Ill.	4
Patch, A. H., Clarksville, Tenn.	5
Sprout, Waldron & Co., Muncy, Pa.	3
Standard Harrow Co., Utica, N. Y.	3
U. S. Wind Engine and Pump Co., Batavia, Ill.	31

Corn Shellers (Power)
Mais (**Egrenoirs de**), á énergie mecanique
Descascaradoras de Maiz (para Fuerza **mecánica**)
Mais Pflanzmaschinen für Pferdebetrieb)

Marseilles Mfg. Co., Marseilles, Ill.	4
Patch, A. H., Clarksville, Tenn.	5
Sprout, Waldron & Co., Muncy, Pa.	3
Standard Harrow Co., Utica, N. Y.	3

Cotton Planters
Coton (Semoirs de)
Sembradoras de Algodón
Baumwoll Pflanzmaschinen

Ohio Cultivator Co., The, Bellevue, Ohio	31

Cultivating Machinery (Hand and Garden)
Culture du sol (Intruments pour la), **á main et pour le jardin**
Maquinaria Cultivadora (de Mano y para Huerta)
Garten Pflüge (für Handbetrieb)

Deere Plow Co., John, Moline, Ill.	36
Moline Plow Co., Moline, Ill.	6
Standard Harrow Co., Utica, N. Y.	3

Cultivating Machinery (Horse and Field)
Culture du sol (Instruments pour la), **à cheval et pour le champ**
Maquinaria Cultivadora (de Caballo y para el Campo)
Bodenkultur Geräte (für Pferdebetrieb)

Bradley Mfg. Co., David, Bradley, Ill.	1
Deere Plow Co., John, Moline, Ill.	36
Moline Plow Co., Moline, Ill.	6
Ohio Cultivator Co., The, Bellevue, Ohio	31
Standard Harrow Co., Utica, N. Y.	3

Engines and Boilers (Stationary)
Machines à vapeur et Chaudières (fixes)
Máquinas de Vapor y Calderas (Fijas)
Maschinen und Kessel (Stationär)

Leffel & Co., James, Springfield, Ohio	29

Engines (Traction and Portable)
Machines à vapeur (Pour la traction et transportables)
Máquinas (De Tracción y Portátiles)
Traktions- oder Zugmaschinen und Lokomobilen

Feed and Ensilage Cutters
Coupe-aliments, coupe-ensilage
Cortadora de Forraje y Ensilaje
Futter- und Grünfutter (Ensilage) Schneidemaschinen

Marseilles Mfg. Co., Marseilles, Ill.	4
Silver Mfg. Co., Salem Ohio	35

Feed Mills
Moulins pour aliments
Molinos de Frorraje ó Pienso
Futtermühlen

Sprout, Waldron & Co., Muncy, Pa.	3

Files (Letter and Card)
Systèmes de classification (lettres et cartes)
Guarda-Cartas y Tarjetas
Skripturenordner (für Briefe und Karten)

Forgings (Carriage)
Pièces forgées (Voiture)
Forjaduras (para carruajes)
Schmiedereien (Kaleschen-)

Gardening Tools (Hand)
Jardinage (**Outils de**) à main
Herramientas de Hortelano (de Mano)
Gärtnerei Handwerkzeug

Grain Cleaning Machinery (Rice, Coffee, Grain, Etc.)
Grains (**Machines à nettoyer les**): **riz, café, grain,** etc.
Maquinaria pare Limpiar Granos (Arroz, Café, Granos, Etc.)
Getreide Reinigungsmaschinen (für Reis, Kaffee, Korn, u. s. w.)

Sprout, Waldron & Co., Muncy, Pa.	5

Grain Drills
Grains (**Semoirs de**)
Sembradoras de Granos
Drillmaschinen

Monitor Drill Co., Minneapolis, Minn.	35
Superior Drill Co., Springfield, Ohio	5

Grain Grinding Mills
Grains (**Moulins à moudre les**)
Molinos para Granos
Schrotmühlen

Flint & Walling Mfg. Co., Kendallville, Ind.	3
Kelly Co., The O. S., Springfield, Ohio	36
Marseilles Mfg. Co., Marseilles, Ill.	4
Sprout, Waldron & Co., Muncy, Pa.	3
U. S. Wind Engine and Pump Co., Batavia, Ill.	31

Hand Carts (Push)
Charrettes à bras
Carretillas de Mano (de Empuje)
Hand-Schiebekarren

Bradley Mfg. Co., David, Bradley, Ill.	1
Deming Co., The, Salem, Ohio	35
Lansing Wheelbarrow Co., Lansing, Mich.	29

Hand Tools (Shovels, Rakes, Hoes, Scythes, Forks, Etc.)
Outils à main (Pelles, râteaux, houes, faux, fourches, etc.)
Herramientas de Mano (Palas, Rastrillos, Azadones, Guadañas. Horquillas, etc.)
Handwerkzeug (Schaufeln, Rechen, Haken, Sensen, Gabeln, u. s. w.

Harrows (Disc, Spring-Tooth and Spike-Tooth)
Herses (à disques, à dents élastiques, à dents droites)
Mielgas ó Rastrillos (de Disco, con Dientes de Resorte y Otros)
Eggen (mit Scheiben-, Federzahn- und Speichenzahn-Vorrichtung)

Bradlay Mfg. Co, David, Bradley, Ill.	1
Bucher & Gibbs Plow Co., Canton, Ohio	2
Collins Plow Co., Quincy, Ill.	29
Deere Plow Co., John, Moline, Ill.	36
Moline Plow Co., Moline, Ill.	6
Ohio Cultivator Co., The, Bellevue, Ohio	31
Standard Harrow Co., Utica, N. Y.	3

Hay Loaders
Foin (**Chargeuses de**)
Cargadoras de Heno
Heu Auflader

Marseilles Mfg. Co., Marseilles, Ill.	4

Hay Presses
Foin (**Presses à**)
Prensas para Heno
Heu Pressen

Bradley Mfg. Co., David, Bradley, Ill.	1
Collins Plow Co., Quincy, Ill.	29
Ertel Co., George, Quincy, Ill.	6
Ohio Cultivator Co., The, Bellevue, Ohio	3
Standard Harrow Co., Utica, N. Y.	3

Hay Rakes
Foin (**Râteaux à**)
Rastros para Heno
Heu Rechen

Bradley Mfg. Co., David, Bradley, Ill.	1
Moline Plow Co., Moline, Ill.	6

Hay Tools (For Handling Hay)
Foin (**Outils** pour la manipulation du)
Herramientas para Heno (para Manipular el **Heno**)
Heubearbeitungs-Apparate und Werkzeuge

Myers, F. E. & Bro., Ashland, Ohio	2
U. S. Wind Engine and Pump Co., Batavia, Ill.	31

Hods (Steel and Wood)
Auges (Acier et bois)
Artesas de Cargar (de Acero y de Madera)
Tünchkübel (Mörteltröge, aus Stahl und Holz)

Lansing Wheelbarrow Co., Lansing, Mich.	29

Implement Parts (Rake, Teeth, Knife Sections, Etc.)
Pièces de rechange (Dents de râteaux, conteaux de faucheuses, etc.)
Partes de Instrumentos (Dientes de Rastrillo, Secciones de Cuchilla, Etc.)
Theile von Landwirthschaftsgeräthen (Rechenzähne, Messertheile, u. s. w.)

Incubators
Conveuses artificielles
Incubadoras
Brutmaschinen (Inkubatoren)

Ertel Co., George, Quincy, Ill.	6

Lawn Mowers
Tondeuses de gazon
Segadoras ó Cortadoras de Césped
Rasen Mähmaschinen

Clipper Lawn Mower Co., Dixon, Ill.	5
Chadborn & Coldwell Mfg. Co., Newburgh, N. Y	1

Leather (Imitation)
Leder (Imitation)
Cuero (Imitación)
Cuir (Imitation)

Fairfield Rubber Co., The, Fairfield, Conn.	5

Machine Tools
Machines-outils
Herramientas Mecánicas
Maschinen-Werkzeug

Silver Mfg. Co., Salem, Ohio	35

Mowers.
Faucheuses.
Segadoras.
Mähmaschinen.

Mills (Corn and Hominy)
Moulins (pour maïs et bouilie)
Molinos (para Moler Maiz Fino y Grueso)
Mühlen (für Getreide und indianisches Reis, Hominy)

Sprout, Waldron & Co., Muncy, Pa.	3
Standard Harrow Co., Utica, N. Y.	3

Oil Cloth
Toile Cirée
Wachstuch

Plows (Walking, Riding and Disc)
Charrues (ordinaires, à siège, à disques)
Arados (de Caminar, de Montar y de Disco)
Pflüge (Geh-, Fahr- und Scheibenpflüge)

Bradley Mfg. Co., David, Bradley, Ill.	1
Bucher & Gibbs Plow Co., Canton, Ohio	2
Collins Plow Co., Quincy, Ill.	29
Deere Plow Co., John, Moline, Ill.	36
Moline Plow Co., Moline, Ill.	6
Ohio Cultivator Co., The, Bellevue, Ohio	31
South Bend Chilled Plow Works, South Bend, Ind.	1
Standard Harrow Co., Utica, N. Y.	3

Potato Machinery
Pommes de terre (Machines pour la culture des)
Maquinaria para Patatas
Kartoffel-Maschinen

Bradley Mfg. Co., David, Bradley, Ill.	1
Moline Plow Co., Moline, Ill.	6
Standard Harrow Co., Utica, N. Y.	3

Pumps, Hand and Power (Lift, Force and Spray)
Pompes, à main, et à énergie mécanique (Pompes aspirantes, foulantes, pulvérisatrices)
Bompas de Mano y para Fuerza Mecánica (Aspirantes, de Forzar y de Rociar)
Pumpen, Hand- und Kraftpumpen (Hebe-, Druck- und Besprengungs-Pumpen)

Deming Co., The, Salem, Ohio	35
Flint & Walling Mfg. Co., Kendallville, Ind.	3
Myers, F. E. & Bro., Ashland, Ohio	2
U. S. Wind Engine and Pump Co., Batavia, Ill.	31

Reapers.
Moissonneuses.
Cosechadoras
Getreide-Mähmaschinen.

Rollers (Field or Road)
Rouleaux (pour champs et pour routes)
Rodillos (para Campo y para Caminos)
Feld- und Weg-Walzen

Bradley Mfg. Co., David, Bradley, Ill.	1
Lansing Wheelbarrow Co., Lansing, Mich.	29
Ohio Cultivator Co., The, Bellevue, Ohio	31
Standard Harrow Co., Utica, N. Y.	3

Rubber Goods
Articles de caoutchouc
Articulos de Caucho
Gummiwaaren

Rubber Tires
Gummireifen
Bandes de roues en caoutchouc
Llantas de Caucho para Ruedas

Morgan & Wright, Chicago, Ill.	1

Scrapers (Road)
Ratissoires (pour routes)
Dragas (para Caminos)
Strassen Scharr-Maschinen (Strassen-Ebener)

Standard Harrow Co., Utica, N. Y.	3

Seeders, Broadcast (Grain and Grass)
Semoirs pour semer à la volée (Grain et graminées)
Máquinas de Sembrar Semillas al Vuelo (**Granos** y Semilla de Yerbas)
Breitsämaschinen (für Getreide und Gras)

Sharpeners and Grinders
Machines à remoudre et à aiguiser
Afiladoras y Amoladoras
Schärfe- und Schleif-Apparate

Sleighs
Traineaux
Trineos
Schlitten

Dapson & Wolf, Oneida, N. Y.	3

Sprayers and Nozzles
Instruments d'arrosage
Rociadoras y Boquereles
Besprengungs-Spritzen und Uebernasen

Deming Co., The, Salem, Ohio	35
Flint & Walling Mfg. Co., Kendallville, Ind.	3
Myers, F. E. & Bro., Ashland, Ohio	2
Standard Harrow Co., Utica, N. Y.	3

Stalk Cutters
Coupe-chaume
Cortadoras de Tallos
Stengel Abschneider

Street Sprinklers
Arrosage des rues (Tonneaux pour l')
Regadoras de Calle
Strassen Bespreng-Wagen

Studebaker Bros. Mfg. Co., South Bend, Ind.	36

Sugar Cultivating Implements
Sucre (**Instruments pour la culture de la canne à**)
Instrumentos para el Cultivo Azucarero
Zucker-Anbau Geräthe

Threshing Machinery
Machines à battre
Maquinaria de Trillar
Dresch Maschinen

Tire Setters
Machines à fixer les bandes de roues
Máquinas de Poner Llantas
Maschinen zum Aufsetzen von Gummireifen

Standard Tire Setter Co., Keokuk, Iowa	36

Tread Powers (Horse, Dog, Sheep, Etc.)
Machines à utiliser l'énergie de la marche (Cheval, Chien, Mouton, etc.)
Motores de Pisada (para Caballo, Perro, **Carnero**, etc.)
Kraft-Tretmaschinen (Pferde, Hunde, **Schafe**, u. s. w.)

Trucks (Hand Warehouse)
Trucs (Emmagasinage à bras)
Carretillas de Mano para almacén
Transport Handwagen (für Waarenhäuser)

Lansing Wheelbarrow Co. Lansing, Mich.	29

Wagons (Business)
Charettes (d'affaires)
Carros (para negocios)
Wägen (Geschäftswägen)

Wagons and Buck-Wagons
Charrettes et charrettes à lessive
Carretones y Carretas
Wägen und Bockwägen

Ohio Valley Wagon Co., The, Marietta, Ohio . . . . .

Wagons and Carts (Farm)
Wagonnets et charrettes (Ferme)
Carretones y Carretas (para Hacienda)
Landwirthschaftliche Wagen und Karren

Lansing Wheelbarrow Co., Lansing, Mich. 29
Studebaker Bros. Mfg. Co., South Bend, Ind. 36

Weeders
Sarcloirs mécaniques
Desyerbadoras
Jäte Maschinen

Standard Harrow Co., Utica, N. Y. 3

Well Tools and Drilling Machinery
Outils pour puits et machines à forer
Instrumentos para Abrir Pozos y Maquinaria para Horadar
Brunnen-Werkzeug und Bohr-Maschinen

Flint & Walling Mfg. Co., Kendallville, Ind. 3

Wheelbarrows
Brouettes
Carretillas
Schiebekarren

Lansing Wheelbarrow Co., Lansing, Mich. 29

Wheels (Carriage)
Roues (Voiture)
Ruedas (Carruaje)
Räder (Kaleschen und Wagen)

Wheels and Wheel Materials
Roues et articles pour roues
Ruedas y Materiales para Ruedas
Räder und Rädermaterialien

Windmills (Towers and Tanks)
Moulins à vent (Tours et réservoirs)
Molinos de Viento (Torres y Tanques)
Windmühlen (Thurm- und Bütten)

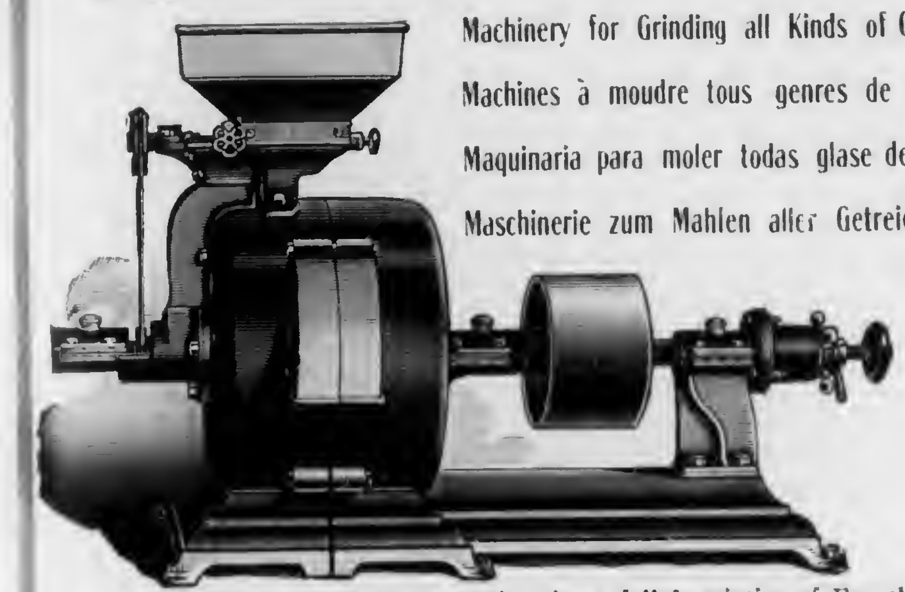
Flint & Walling Mfg. Co., Kendallville, Ind. 3
Marseilles Mfg. Co., Marseilles, Ill. 4
U. S. Wind Engine and Pump Co., Batavia, Ill. 31

Wood Sawing Machinery
Bois (Machines à scierie)
Maquinaria para Aserar Madera
Holzsäge-Maschinen

Marseilles Mfg. Co., Marseilles, Ill. 4
U. S. Wind Engine and Pump Co., Batavia, Ill. 31

Alphabetical List of Advertisers.
Annonces par ordre Alphabétique.
Lista Alfabética de las casas que se Anuncian en esta Revista.
Alphabetisch geordnetes Inhalts-Verzeichnis von Inserenten.

Bradley Mfg. Co., David, Bradley, Ill.	1
Bucher & Gibbs Plow Co., Canton, Ohio	2
Chadbourn & Coldwell Mfg. Co., Newburgh, N. Y.	1
Clipper Lawn Mower Co., Dixon, Ill	5
Collins Plow Co., Quincy, Ill.	29
Columbus Bolt Works, Columbus, Ohio	36
Dapson & Wolf, Oneida, N. Y.	3
Deere Plow Co., John, Moline, Ill.	36
Deming Co., The, Salem, Ohio	35
Ertel Co., Geo., Quincy, Ill.	6
Fairfield Rubber Co., The, Fairfield, Conn.	5
Flint & Walling Mfg. Co., Kendallville, Ind.	3
Kelly Co., The O. S., Springfield, Ohio	36
Lansing Wheelbarrow Co., Lansing, Mich.	29
Leffel & Co., James, Springfield, Ohio	29
Marseilles Mfg. Co., Marseilles, Ill.	4
Moline Plow Co., Moline, Ill.	6
Monitor Drill Co., Minneapolis, Minn.	35
Morgan & Wright, Chicago, Ill.	1
Myers & Bro., F. E., Ashland, Ohio	2
"1900" Washer Co., Binghamton, N. Y.	35
Ohio Cultivator Co., The, Bellevue, Ohio	31
Patch, A. H., Clarksville, Tenn.	5
Potter Co., Morgan, Fishkill-on-Hudson, N. Y.	3
Silver Mfg. Co., The, Salem, Ohio	35
Sprout, Waldron & Co., Muncy, Pa.	3
Standard Harrow Co., The, Utica, N. Y.	3
Standard Tire Setter Co., Keokuk, Iowa	35
Studebaker Bros. Mfg. Co., South Bend, Ind.	36
Superior Drill Co., Springfield, Ohio	5
South Bend Chilled Plow Co., South Bend, Ind.	21
U. S. Wind Engine and Pump Co., Batavia, Ill.	31



Machinery for Grinding all Kinds of Grain
Machines à moudre tous genres de grains
Maquinaria para moler todas glase de granos
Maschinerie zum Mahlen aller Getreidesorten

Write for one of our booklets which gives a full description of French Burr and Attrition, Feed and Meal Mills, Cotton Seed and Linseed Oil Cake Mills, Emery Rock Mills, Cotton, Ear and Ore Crushers, Magnetic Separators, Corn Shellers, etc.

Ecrivez pour un pamphlet contenant description détaillée de moulins à meules de France et à frottement, de moulins pour grains de cotton et de tourteaux de lin, de moulins à pierre d'émeri, de broyeurs d'épis et de minérais, de moulins magnétiques, d'écosseurs, etc.

Escríbasenos pidiendo uno de nuestros libritos, en que se da una completa descripción de nuestros Molinos de Piedra Francesa y de Roce, para Pienso y para Harina, Molinos de Semillas de Algodón, y para moler Tortas de Aceite de Semillas de Linaza, Molinos para Roca de Esmeril, Trituradoras de Algodón, Mazorcas y Minerales, Separedoras Magnéticas, Desgranadoras de Maiz, etc.

Man verlange eines unserer Büchlein, das volle Beschreibung unserer französischen Mahlsteine und Reibevorrichtung enthält, wie auch aller Futter-Vorrichtungen, Mehl-Mühlen, Baumwollensaamen- und Leinölsaamen Kuchen-Mühlen, Schmirgel-Bergmühlen, Baumwollen-, Aehren- und Erzzerstückelungs-Maschinen, magnetische Separatoren, Korn-Enthülsemaschinen, u. s. w.

SPROUT, WALDRON & CO.

Drawer M. MUNCY, PA., U. S. A.

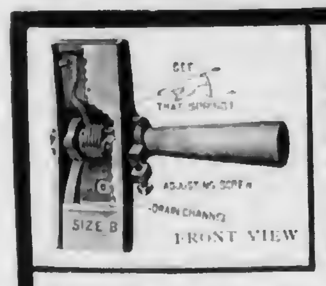
EASY RIDING

This two-wheeler is our leading specialty for export.

We equip it with **RUBBER TIRES**, if desired, put on with two wires. The work, like the job itself, is sold under our positive guarantee.

LET US SEND YOU THE PRICES

Dapson & Wolf
ONEIDA, NEW YORK, U. S. A.
WHOLESALE MAKERS OF
FINE CARRIAGES



FRONT VIEW

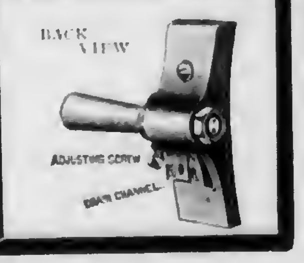
POTTER'S SPRING BRAKE BLOCKS . . .

Very substantial. Over 25,000 sets in use throughout the United States. We make them for Steel Tires, and they are especially adapted for Rubber Tires.

Will Not Injure Rubber Tire a Particle

We solicit your correspondence

The Morgan Potter Company
FISHKILL-ON-HUDSON, N. Y., U. S. A.



BACK VIEW

The Standard Harrow Co.

UTICA, N. Y., U. S. A.

ABERDEEN, SR. SPRING-TOOTH HARROW

Unequalled Strength
No Clogging
Reversible Points on Teeth

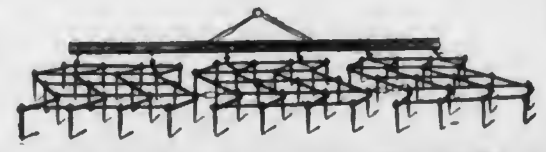
THE STANDARD LINE includes one and two-section Spring-Tooth Harrows and all styles and sizes of Spike-tooth and Disc Harrows, Cultivating Implements, Potato Harvesters, Potato Sprayers, etc., and is one of the most favorably known lines in the leading agricultural countries.

We guarantee prompt service for all export orders. Our factory is only five hours' ride from New York City.

WRITE IN YOUR OWN LANGUAGE FOR CATALOGUE F

ZIG ZAG STEEL SPIKE-TOOTH HARROW

20-Tooth Sections
½-Inch Teeth



A Windmill that does satisfactory work naturally is the one you want. The "STAR" is the one that pleases. Our booklets in English, German, French and Spanish tell all about

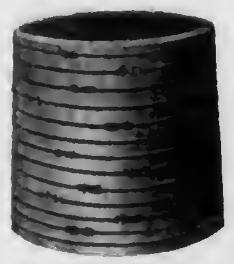
"STAR" WINDMILLS

designed for the heavy and varied work required of them abroad. The "STAR" is built in all sizes, thoroughly galvanized, has ball bearings and is the easiest running Mill made.

"STAR" PUMPING MILL

For many years we have been exporting Windmills and know what is needed to meet all requirements and please our foreign friends. We understand how these goods should be packed for safe delivery, and the packing receives our most careful attention. With all the required parts at hand and properly fitted it facilitates the assembling and erecting of the Mills.

We build **Hand and Windmill Pumps** of various designs, all sizes of **Pine, Cypress** and **Galvanized Steel Tanks, Galvanized Steel Towers** any height, **Power Windmills** for grinding feed and running light machinery and **Steel Substructures** all heights, to support Tanks of any capacity.



CORRESPONDENCE INVITED

FLINT & WALLING MFG. CO. KENDALLVILLE Indiana, U. S. A.

New York Office, 96 Wall Street, New York, U. S. A.

Cable Address, "STAR," Kendallville, Ind. Codes, "Lieber," "A B C, 4th edition," "Western Union" and "Private."

Wagons (Business)
Charettes (d'affaires)
Carros (para negocios)
Wägen (Geschäftswägen)

Wagons and Buck-Wagons
Charrettes et charrettes à lessive
Carretones y Carretas
Wägen und Bockwägen

Ohio Valley Wagon Co., The, Marietta, Ohio . . . . . .

Wagons and Carts (Farm)
Wagonnets et charrettes (Ferme)
Carretones y Carretas (para Hacienda)
Landwirthschaftliche Wagen und Karren

Lansing Wheelbarrow Co., Lansing, Mich. 29
Studebaker Bros. Mfg. Co., South Bend, Ind. 36

Weeders
Sarcloirs mécaniques
Desyerbadoras
Jäte Maschinen

Standard Harrow Co., Utica, N. Y. 3

Well Tools and Drilling Machinery
Outils pour puits et machines à forer
Instrumentos para Abrir Pozos y Maquinaria para Horadar
Brunnen-Werkzeug und Bohr-Maschinen

Flint & Walling Mfg. Co., Kendallville, Ind. 3

Wheelbarrows
Brouettes
Carretillas
Schiebekarren

Lansing Wheelbarrow Co., Lansing, Mich. 29

Wheels (Carriage)
Roues (Voiture)
Ruedas (Carruaje)
Räder (Kaleschen und Wagen)

Wheels and Wheel Materials
Roues et articles pour roues
Ruedas y Materiales para Ruedas
Räder und Rädermaterialien

Windmills (Towers and Tanks)
Moulins à vent (Tours et réservoirs)
Molinos de Viento (Torres y Tanques)
Windmühlen (Thurm- und Bütten)

Flint & Walling Mfg. Co., Kendallville, Ind. 3
Marseilles Mfg. Co., Marseilles, Ill. 4
U. S. Wind Engine and Pump Co., Batavia, Ill. 31

Wood Sawing Machinery
Bois (Machines à scierie)
Maquinaria para Aserar Madera
Holzsäge-Maschinen

Marseilles Mfg. Co., Marseilles, Ill. 4
U. S. Wind Engine and Pump Co., Batavia, Ill. 31

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Clipper Lawn Mower Co., Dixon, Ill 5
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Dapson & Wolf, Oneida, N. Y. 3
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Superior Drill Co., Springfield, Ohio 5
South Bend Chilled Plow Co., South Bend, Ind. . 1
U. S. Wind Engine and Pump Co., Batavia, Ill. . 31

Machinery for Grinding all Kinds of Grain
Machines à moudre tous genres de grains
Maquinaria para moler todas glase de granos
Maschinerie zum Mahlen aller Getreidesorten

Write for one of our booklets which gives a full description of French Burr and Attrition, Feed and Meal Mills, Cotton Seed and Linseed Oil Cake Mills, Emery Rock Mills, Cotton, Ear and Ore Crushers, Magnetic Separators, Corn Shellers, etc.

Ecrivez pour un pamphlet contenant description détaillée de moulins à meules de France et à frottement, de moulins pour grains de cotton et de tourteaux de lin, de moulins à pierre d'émeri, de broyeurs d'épis et de minérais, de moulins magnétiques, d'écosseurs, etc.

Escríbasenos pidiendo uno de nuestros libritos, en que se da una completa descripción de nuestros Molinos de Piedra Francesa y de Roce, para Pienso y para Harina, Molinos de Semillas de Algodón, y para moler Tortas de Aceite de Semillas de Linaza, Molinos para Roca de Esmeril, Trituradoras de Algodón, Mazorcas y Minerales, Separedoras Magnéticas, Desgranadoras de Maiz, etc.

Man verlange eines unserer Büchlein, das volle Beschreibung unserer französischen Mahlsteine und Reibevorrichtung enthält, wie auch aller Futter-Vorrichtungen, Mehl-Mühlen, Baumwollensaamen- und Leinölsaamen Kuchen-Mühlen, Schmirgel-Bergmühlen, Baumwollen-, Aehren- und Erzzerstückelungs-Maschinen, magnetische Separatoren, Korn-Enthülsemaschinen, u. s. w.

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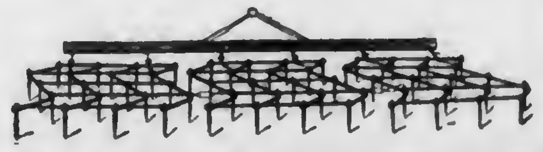

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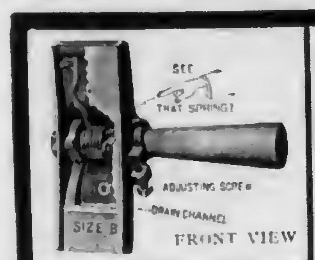
WHOLESALE MAKERS OF
FINE CARRIAGES



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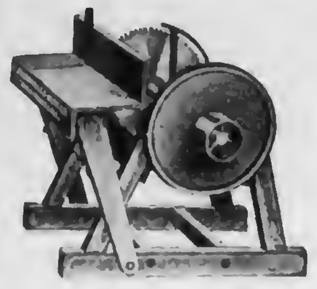
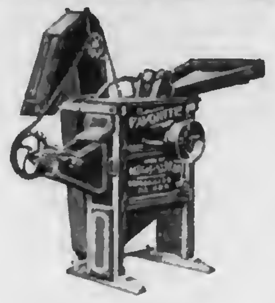
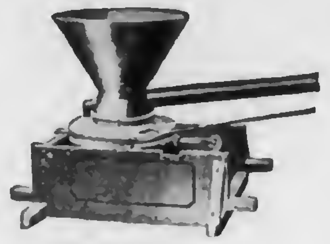
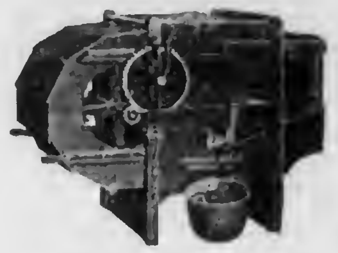
INTENTIONAL SECOND EXPOSURE

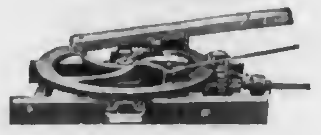

WOOD SAWS,
Steel or wood frames.

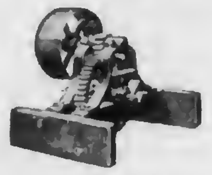

TWO HOLE HAND
CORN SHELLER.

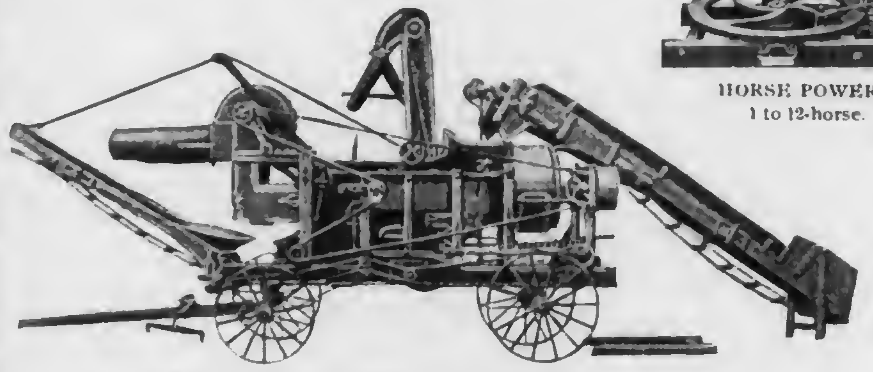

FEED GRINDERS
Sweep or geared

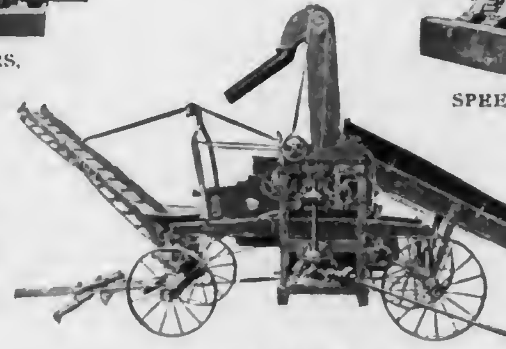
HAND SHELLER

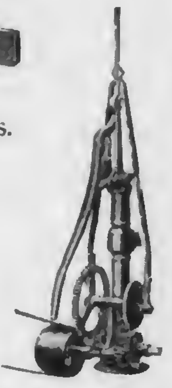

FARM FANNING MILLS.


HORSE POWERS,
1 to 12-horse.


SPEED JACKS.


NEW PROCESS DUSTLESS CYLINDER CORN SHELLER
For husked or unhusked corn, made in three sizes, capacities ranging from 400 to 1,200 bushels per hour.


CYCLONE COMBINATION FORCE FEED
CORN SHELLER
All sizes and styles for horse power or engine.


PUMPING JACKS

Address MARSEILLES MF'G. CO. MARSEILLES, ILL. U.S.A. CABLE ADDRESS { A.B.C. Code "ADAMS MARSEILLES"
Western Union Code "ADAMS"

Extend your trade beyond the seas

AMERICAN manufactures are not only in demand, but in many cases are given the preference in foreign countries. Especially is this true of Agricultural Machinery, Farm Supplies, Vehicles and Hardware Specialties. If you are manufacturing any of these goods voice it abroad and make the world your field. You can do it just as easily as you can secure home trade if you'll talk through the

Export Implement Age

IT REACHES ALL FOREIGN COUNTRIES
WRITE US FOR ADVERTISING RATES

Superior Grain Drills

Semoirs Supérieurs de Grains. Manufacturés en une grande variété de dimensions pour Grains seulement ou pour Grains et Fertilisants mélangés, avec Disque, Houe et Soc creusant les sillons. Nous manufacturons des modèles spéciaux de Semoirs de Grains pour l'Europe, l'Australie, l'Amerique du Sud et le Sud de l'Afrique. Demandez les Catalogues descriptifs illustres.

Sembradoras Superiores de Granos. Se fabrican de muchos tamaños de sembrar Granos sóla ó combinada con Fertilizador, con surcadores de Disco, de Azadón ó Zapatillas. Nosotros fabricamos Sembradoras de tipos especiales para Europa, Australia, Sud América y el Africa del Sur. Envíese por un Catálogo descriptivo ilustrado.

"Superior" Getreiderillen. Wird in vielseitiger Auswahl von Grössen hergestellt: Einfache Getreiderillen und Kombinationen von Getreide und Pflugrillen mit Scheiben, Hauen und Schuh-Lockerungs Vorrichtungen. Wir fabriziren besondere Arten von Getreiderillen für Europa, Australien, Süd-Amerika und Süd-Afrika. Man verlange illustrirte beschreibende Kataloge.

We manufacture special types of Grain Drills for Europe, Australia, South America and South Africa

Made in a large variety of sizes in Plain Grain and combined Grain and Fertilizer, with Disc, Hoe and Shoe furrow openers

THE SUPERIOR DRILL CO., Springfield, O., U.S.A.

THE FAIRFIELD RUBBER CO.

Manufacturers of

Carriage Cloth, Imitation Leather, Etc.

FAIRFIELD, CONN., U. S. A.

We believe you will find our cloths more desirable fabrics than have been presented for your consideration.

Not only do we offer our lines as superior to any, but some are special with us.

We warrant all our goods in every manner, and in all climates.

All we ask is a trial of our productions, as we know the result will be in our favor.

Our many years' connection with the foreign trade places us in a position to know fully as to their wants, and the large orders we receive from that field convinces us that the high standard at which we have kept our goods is appreciated. We refer with pleasure to any leading Export house in New York as to the merit of our cloths.

Send for quotations through any Export house, or write us direct.

When ordering goods in our line, ask for goods made by

The Fairfield Rubber Co.

CLIPPER LAWN MOWER CO. DIXON ILLINOIS

THE MOWER that will kill all the Weeds in your Lawns. If you keep the weeds cut so they do not go to seed, and cut your grass without breaking the small feeders of roots, the grass will become thick and the weeds will disappear.

THE CLIPPER WILL DO IT

Ask Your Dealer for Them

The Export Implement Age

is an independent journal devoted exclusively to the Export Trade in Agricultural Machinery, Pumps, Wind Mills, Farm Tools, Dairy Supplies and Hardware Specialties.

Advertising Rates Furnished Upon Application

Black Hawk Mill

Wgt
17
Lbs.

GRINDS
Corn, Wheat,
Rye, Rice,
Coffee,
Spices, Etc.

Instantly Adjusted to Grind Fine or Coarse.

WILL DO GOOD WORK AND LAST

Grinding Plates are of the Hardest and Strongest Metals. Can be replaced at slight cost.

Packed in barrels of 12 each. Gross weight, 240 lbs.; net, 204 lbs. Measurement 6⅓ cubic feet.

A. H. PATCH, Sole Maker,
Clarksville, Tenn., U. S. A.

Order through any Reliable Commission House.

PATCH'S PATENT

Black Hawk Corn Sheller

Wgt.
15 lbs.

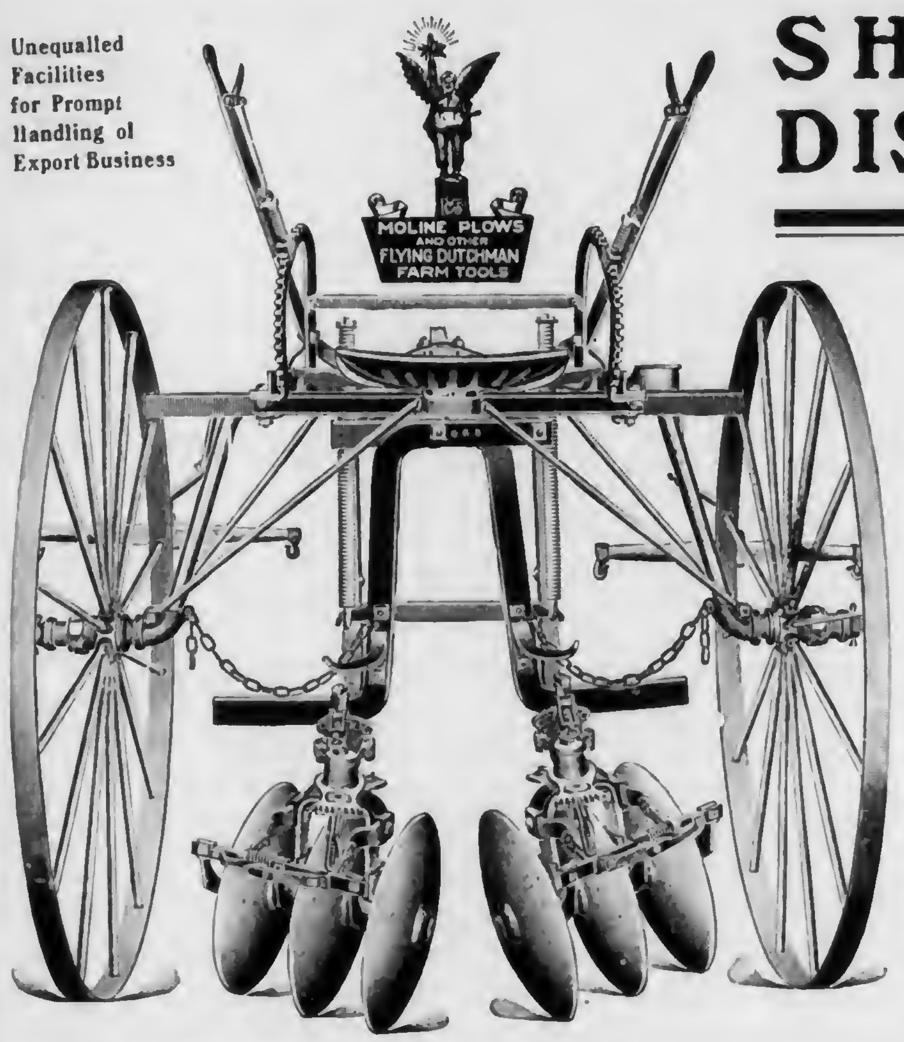
SHELLS FAST.
SHELLS CLEAN.
SHELLS EASILY.

Beware of Imitations

Capacity 8 to 12 bushels ear corn per hour.

Packed 10 in a barrel. Gross, 180 lbs.; Net, 150 lbs. Measurement 6⅓ cubic feet.

MADE ONLY BY
A. H. PATCH, CLARKSVILLE, TENN., U. S. A.



Unequalled Facilities for Prompt Handling of Export Business

SHANGHAI KIDD DISC CULTIVATOR

Forty-six inches from lowest point of arch to the ground. Adjustable in width from 48 to 72 inches. Popular for cultivating Corn, Cane, Tobacco, etc. Packed for export, weighs 830 pounds. Occupies 25 cubic feet of space.

STALK CUTTERS, WALKING AND RIDING PLOWS, DISC PLOWS, DISC HARROWS, PIPE-LEVER HARROWS, CORN PLANTERS AND DRILLS, LISTERS, COTTON PLANTERS, CULTIVATORS—BEET SEEDERS, CULTIVATORS and PULLERS

MOLINE PLOW CO.

MOLINE, ILL., U. S. A.

FOREIGN AGENCIES:

J. & J. DRYSDALE & CO.
Sole Agents for Argentine
Buenos Ayres, South America

MALCOMESS & CO.
Sole Agents for South Africa
East London, South Africa

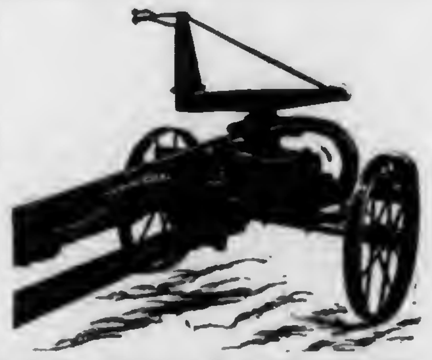
FRONT VIEW
VUE DE FACE
VISTA DEL FRENTE
VORDERANSICHT

37 YEARS building hay, straw, wool, cotton and corn fodder presses should certainly make us experts, and we claim that our presses are the simplest, easiest draught on the team and the smoothest balers on the market to-day.
Our presses will bale from 10 to 18 tons a day in hay.
Our presses will bale from 10 to 15 tons a day in straw.

Depuis 37 années que nous construisons des presses à foin, à paille, à laine, à coton, à fourrage de maïs, nous avons indubitablement acquis une expérience qui a fait de nous des experts, et nous n'hésitons pas à dire que nos presses sont les plus simples qui soient aujourd'hui sur le marché et celles qui fatiguent le moins l'attelage et fonctionnent le plus aisément.
Nos presses emballottent de 10 à 18 tonnes de foin par jour
Nos presses emballottent de 10 à 15 tonnes de paille par jour.

Despues de 37 años que construimos prensas para heno, paja, lana, algodón y forraje de maiz tenemos que ser expertos en ese ramo, y por lo tanto reclamamos que nuestras prensas son las más simples y las más livianas para el acarreo por parejas de caballos, y las enfardadadoras mejores que existen hoy en el mercado.
Nuestras prensas enfardan de 10 á 18 toneladas de heno por dia.
Nuestras prensas enfardan de 10 á 15 toneladas de paja por dia.

37 Jahre ununterbrochener Fabrikation von Heupressen, Strohpressen, Wolle- und Baumwollenpressen, wie auch Maisfutter-Pressen, sollte uns wahrlich in den Stand gesetzt haben, Experten dieser Branche geworden zu sein; wir beanspruchen deshalb für unsere Pressen, dass sie die einfachsten in Konstruktion sind, beim Gespann den leichtesten Zug haben und zum Emballiren die vorzüglichsten Dienste leisten. Unsere Pressen sind im Stande 10 bis 18 "Tonnengehalt" Heu und 10 bis 15 "Tonnengehalt" Stroh täglich zu emballiren.



Catalogue free
Catalogue franco sur demande
Catálogo Gratis
Kataloge frei

Our "Gem" Full Circle

We make a line of both Full Circle and Half Circle Presses.
Prices, f. o. b. cars New York City, on our Gem Full Circle Balers, properly crated for export:

	Net Weight.	Gross Weight.	Space	Prices.
14 x 18 Baler	2,650 (1,457 Kilos)	3,700	115 cubic feet	$215.25 (£44 16.10)
16 x 18 Baler	2,775 (1,526 Kilos)	3,800	171 cubic feet	218.00 (£45. 8. 4)
17 x 22 Baler	2,975 (1,636 Kilos)	4,000	120 cubic feet	221.50 (£46. 3. 0)

Notre presse "Gem" à cercle entier

Nous fabriquons un assortiment de presses à demi-cercle et à cercle entier.
Prix de nos presses "Gem" à cercle entier, mises en wagon à New York et convenablement emballées pour l'exportation:

	Poids net.	Poids brut.	Espace.	Prix.
Presse 14 x 18	2,650 (1,457 kilos)	3,700	115 pieds cubes	$215.25 (£44.16.10)
Presse 16 x 18	2,775 (1,526 kilos)	3,800	171 pieds cubes	218.00 (£45. 8. 4)
Presse 17 x 22	2,975 (1,636 kilos)	4,000	120 pieds cubes	221.50 (£46. 3. 0)

Nuestra Prensa "Gem" Circulo Entero

Nosotros fabricamos un surtido completo de prensas tanto de medio circulo como de circulo entero. Los precios de embarque de la Prensa "Gem" son franco á bordo de los carros hasta New York, y se empaquetan con seguridad para exportarlas.

	Peso Bruto.	Neto.	Espacio.	Precio.
Prensa 14 x 18	2,650 (1,457 Kilos)	3,700	115 piés cúbicos	$215.25 (£44.16.10)
Prensa 16 x 18	2,775 (1,526 Kilos)	3,800	171 piés cúbicos	218.00 (£45. 8. 4)
Prensa 17 x 22	2,975 (1,636 Kilos)	4,000	120 piés cúbicos	221.50 (£46. 3. 0)

Unsere Voll-Zirkel "Gem" Presse.

Wir fabriziren ein Assortiment von Voll- und Halbzirkel-Pressen.
Preise unserer Vollzirkel Emballage-Pressen, frei Board New York, fertig für den Exportversand verpackt:

	Nettogewicht.	Bruttogewicht.	Rauminhalt.	Preise.
14 x 18 Presse	2,650 (1,457 Kilo)	3,700	115 Kubikfuss	$215.25 (£44.16.10)
16 x 18 Presse	2,775 (1,526 Kilo)	3,800	171 Kubikfuss	218.00 (£45. 8. 4)
17 x 22 Presse	2,975 (1,636 Kilo)	4,000	120 Kubikfuss	221.50 (£46. 3. 0)

GEO. ERTEL CO. - 592 Kentucky Street, Quincy, Ill., U. S. A.

EXPORT IMPLEMENT AGE

Vol. XIII. Philadelphia, Pa., U. S. A., January, 1906. No. 4.

American Wheelbarrows in Foreign Lands

A few years ago the wheelbarrow was a very crude affair, usually of home production, or made by a local wheelwright by hand. How little did the people of those days think there would ever be large manufacturing plants, employing several hundred men and consuming annually several million feet of lumber and hundreds of tons of steel and iron in their production, or that they would ever become so important an item in international commerce as they have.

In a former issue we showed a photograph and gave a description of the Lansing Wheelbarrow Co. yards and works at Lansing, Mich., U. S. A. We now present to our readers a few pictures of their works at Parkin, Ark., U. S. A., where the company have a tract of 12,000 acres of heavily timbered land covered with oak, elm, hickory and other valuable hard woods.

They have a large band sawmill, running night and day, cutting 50,000 feet of lumber every working day. They have built up quite a village around these works for their help, having added nearly 100 houses since the photo was taken. The character of the timber is shown by a log on one of the company's lumber trucks.

The company are making most of their wood barrow parts at this factory, and supply the iron and steel parts from the Lansing Works, which have been largely converted into the manufacture of steel barrows, drag scrapers, steel cars and other steel goods for the contractors' trade.

The products of this company are now being used by the United States Government in digging the Panama Canal; also in building railroads in the Argentine, working the mines of South Africa and Mexico, as well as in the gardens of the royal families of England and many other foreign countries, thus showing their wide range of adaptation; in fact, they build a large variety of types and sizes of wooden and steel wheelbarrows, store and warehouse trucks, factory trucks of special designs for special work, steel drag scrapers, contractors' cars and tools.

Their catalogue No. 8, of 160 pages, showing full line, just issued, will be sent to all dealers on application to their export office, B-21 Produce Exchange, New York.

Sparrow Ave., Parkin, Ark., showing houses of colored help, of which there are 120 all told.

Upper end of Sporrow Ave., showing houses of white help, of which there are 25.

Log yard and mill. The company have 12,000 acres of land producing such timber.

Log 4 feet in diameter.

The company's saw mill.

The company's lumber yard.

NIAGARA AND VICTORIA

Since the attention of the whole world has been drawn to the great Victoria Falls in South Africa, many comparisons have been made between them and the Niagara Falls. In his lecture on "The Distribution of Power," in Johannesburg last August, Prof. W. E. Ayrton asked, "What is the true comparison between the power of the Victoria and the Niagara Falls?" His answer was, the flow at Niagara varies between 62,000,000 and 104,000,000 gallons per minute; that at Victoria is as low as about 5,000,000 gallons in August. The mean available drop at Niagara is 160 feet and at Victoria 380 feet. Hence, while the minimum Niagara flow represents about 3,000,000 horse-power, the Victoria flow in August represents only 580,000 horse-power, and, accepting the statements of local authorities that in November the flow at Victoria drops to only 2,500,000 gallons per minute, the minimum horse-power there can be only about one-tenth of Niagara's minimum. The maximum for Victoria is not given.

AN AMERICAN CITY

The equivalent of over forty-seven solid miles of buildings, single frontage, costing approximately $62,000,000—a record exceeded only by the phenomenal activity of 1892, the year preceding the world's fair—represents the colossal building operations in Chicago during the past year.

The real estate transactions of the year, with a total of approximately $140,000,000, also exceeded those of any year since 1892.

Considering all the circumstances, this record is probably the most remarkable in the history of the city and testifies to its phenomenal growth and prosperity.

This becomes the more readily apparent when the conditions surrounding the city in 1905 are compared with those which obtained during 1892.

During this latter period the city was on the crest of a great real estate and building boom without a parallel in its history.

It had its beginning in 1890, when, following the wild, speculative real estate boom which had raged previously like a contagion farther west, notably at Wichita, Kansas City, and Omaha, and influenced by the approaching world's fair, the city entered upon a period of intense trading activity, with the result that the transactions for that year reached the huge total of $227,486,950. They were slightly less in 1891, when the figures reached $181,522,268, while for 1892, which witnessed the culmination of this movement, the total was $180,892,364.

Great activity in building always accompanies these real estate booms, and in the case of Chicago during the period in question, it was stimulated materially by the approaching world's fair. The result was that from a total cost of $25,065,500 in 1889 there was a jump to $47,322,100 in 1890, to $54,001,800 in 1891, and to $63,463,400 in 1892.

And yet, in spite of these strikingly abnormal and stimulative conditions, the total for this last named year, which marked the climax of that period's building operation, exceeded by only a little over $1,000,000 that of the present year.

On the other hand, several unfavorable conditions have been present naturally tending materially to discourage building. Such are high material prices and labor wages, and notably one of the most protracted and disturbing labor troubles in the history of the city—the teamster's strike.

Of much significance, too, is the evidently slight deterring effect which these high material prices and high wages have had upon the year's operations. Architects and contractors practically are agreed in the statement that prospective builders apparently have given little consideration to these all-important matters. This is explained on the ground of the unusually profitable returns enjoyed by all modern, well located buildings.

This is undoubtedly the moving cause behind the great building operations of the year, and must be accepted as convincing evidence of the great prosperity of the city.

DEL CORONADO

One of the finest hotels on the American Continent: located near the Southwestern point of the United States and on the shore of the Pacific Ocean. The temperature is from 65 to 70 degrees, the year round.

ARGENTINA USES THE WORLD'S BEST IMPLEMENTS

A special agent of the department of commerce and labor makes the following report on the average percentage of Argentina's implement trade secured by the United States for the past five years:

Plows, 67.3; harvesters, 94.3; headers, 98; threshers, 25.1; corn shellers, 44.1; sowers, 88.7; rakes, 93.8; all other, 62.2.

"Of all the imports into Argentina," continues the report, "none show a more rapid increase than agricultural implements and machinery. The total purchases have jumped from $1,093,000 per annum for the years 1895-1898 to $3,340,000 per annum for 1900-1904, an increase of over 205 per cent. For 1895-1898 these goods constituted 6.8 per cent. of the total imports of iron and steel; in 1900-1904 this has risen to 13.1 per cent. And the United States holds two-thirds of this rapidly increasing trade.

"There is, however, one disquieting element in the situation. Our share in the trade, though very large, is less than it was five years ago. In harvesters, threshers and rakes our percentage has increased, but in all the other items it has declined. The truth of the case seems to be that when the phenomenal growth of Argentina's cereal production came a few years ago, the "estancieros" turned naturally toward the United States as the source of supply of the best agricultural implements. Our success in the trade stimulated competition and Europe began a campaign for the substitution of her goods for ours. This effort is meeting with a certain amount of success, and while our supremacy cannot be said to be threatened, there is just enough danger to make it unwise for us to be content to rest on our laurels."

TWO AMERICAN SPECIALTIES

We are pleased to be able to show to our readers illustrations of two American specialties which are widely known in all the markets of the world. We refer to the "Black Hawk" corn sheller, and the "Black Hawk" grist mill. These are small machines in size but they perform an important work and the saving which is annually affected by their use would amount to an immense sum of money.

The "Black Hawk" corn sheller is an ingenious machine, and every detail of its construction is designed to make it perfect in its operation. It has a capacity of from six to fourteen bushels of ear corn per hour, which makes it large enough for the needs of the average farmer. One of its most notable features is that it is so easy to operate that a woman or a child can use it to advantage. The ear of corn goes into this machine, and every grain is taken off the cob and the cob is thrown out, while nothing but the shelled corn goes into the box or barrel.

Made by Mr. A. H. Patch, Clarksville, Tenn., U. S. A.

The sheller is a most important part of this machine. It is largely of malleable iron. The bearings are long and chilled. There is nothing about the sheller to wear out, and it is so well made that breakage is a rare occurrence. The compact size and the light weight of the "Black Hawk" sheller makes it specially suited for the export trade. Ten of these shellers are packed in a barrel, taking a space of but 6½ cubic feet. The gross weight of the barrel is 180 lbs., while the net weight of the ten shellers is 150 lbs., or 15 lbs. each. This makes the cost for freight and other handling very small in comparison with that of the old style box corn sheller.

Made by Mr. A. H. Patch, Clarksville, Tenn., U. S. A.

This sheller was invented by Mr. A. H. Patch, and has from the first been made by him in such a careful way that there has never been a "Black Hawk" sheller that has failed to give perfect satisfaction. The name of A. H. Patch on a corn sheller has become the recognized sign of the very highest quality in hand corn shellers.

The genuine "Black Hawk" sheller, like all original and successful inventions, has been imitated. The trade-mark "Black Hawk" and the maker's home and address, A. H. Patch, Clarksville, Tenn., should be on every sheller, otherwise the machines are bogus.

The "Black Hawk" grist mill is for hand use in the home and on the farm. It grinds corn, wheat, rye, rice, coffee, peas, beans, salt, etc., etc. It may be adjusted to grind coarse or as fine as wanted, and makes the best kind of corn meal, graham and rye flour for table use. The mill is made with the greatest care and in its construction all parts are interchangeable and can easily be put into place by anyone without special tools. The grinding plates are of special mixtures of metals and will wear for years. They can be replaced when worn out with new plates at a very slight cost. The heavy fly wheel usually found on hand mills has been left off of the "Black Hawk" mill, and in the place a long malleable iron crank has been adopted. These hand wheels add to the cost of the mill and double the cost for freight, therefore a larger and better mill can be furnished and the cost for freight will be hardly half as much.

Twelve "Black Hawk" mills are packed for export in a special barrel, measuring 6½ cubic feet. The gross weight of the barrel is 240 pounds and the net weight 204 pounds. The weight of the complete mill is only 17 pounds.

Since Mr. Patch put this mill on the market five years ago the demand has grown wonderfully. People everywhere have use for a good hand power mill that will do the work and that can be sold for a reasonable price. It has especially been in demand for export.

The entire factory of Mr. Patch is given up to the manufacture of these shellers and mills. He has no other business, and this fact insures the most careful construction and best materials. The export business receives special care. Goods packed to go any distance, and receive any treatment, yet arrive at their destination in good order. Full particulars and information may be had by those interested in these machines by addressing Mr. A. H. Patch, Clarksville, Tenn., U. S. A.

RUBBER TIRES

Morgan & Wright, Chicago, U. S. A., are America's foremost manufacturers of rubber tires for vehicles and automobiles. With twenty years' experience in the manufacture of this line, they employ the most advanced methods, and by using materials of the highest grade, their product is not to be excelled in any respect. Those of our readers who are interested should write to them without delay for further particulars.

HAY BALING PRESSES

The David Bradley hay baling press, made by the David Bradley Mfg. Co., Bradley, Ill., U. S. A., is known in every country where modern methods of handling the hay crop are employed. It is a machine which combines enormous strength with simplicity of construction and ease of operation. A picture of the press appears in their advertisement on the front cover of this paper. Our readers are requested to write for further particulars and information as to terms, etc.

ELECTRIC LOCOMOTIVES

The New York Central Railroad has made a lengthy series of tests of an experimental electric locomotive, designed for handling the express traffic within a radius of 35 miles of the New York terminal station. These tests have been carried out on a six-mile stretch of track on the main line of the company's system, west of Schenectady, and they have now been continued steadily for such a long period of time, that the engine may be said to have experienced practically every conceivable condition of weather, load and track. The data gathered in this way are so eminently satisfactory that the company have placed orders for electrical equipments, which are said to aggregate over $6,000,000 in value. The order includes thirty-five electric locomotives for the through express service, and 175 cars, which are to be used in the suburban service. Each of these engines will weigh about ninety-five tons and will develop normally 2,200 horsepower, although this amount can be exceeded when it is necessary. They will be carried on eight 44-inch driving wheels, all coupled. Although the draw-bar pull considerably exceeds that of the most powerful steam express locomotives of the day, the concentrated load on the drivers will be considerably less than on steam locomotives. Each engine will be able to haul at schedule speed a train of about twelve cars, equivalent to a load of about 500 tons. The electric locomotives will be coupled to the main line incoming express trains at Croton, where there will be a running shed and shop conveniences for both the steam and electric locomotives. The expresses will be run into and brought out from New York City entirely by electric power. The same conditions will prevail at White Plains, 25 miles out from New York City on the Harlem Division, where the steam locomotives will be uncoupled and the electric locomotives will take their place. It is expected that this equipment will be ready for work within the next twelve months, by which time sufficient progress will have been made with the change of tracks to admit of a partial use of the electrical service.—*Scientific American.*

THE BRONTOSAURUS AND THE WHALE

The gigantic animals of the so-called age of reptiles, whose remains are especially abundant in some of the lands bordering the Rocky Mountains, appeal so powerfully to the imagination that an exaggerated notion of their size and weight is frequently entertained. It has more than once been pointed out that, as far as paleontology shows, the earth never contained more bulky creatures than the whales of to-day. A recent comparison between the probable weight of the huge *Brontosaurus excelsis*, a skeleton of which is in the American Museum of Natural History, New York, and that of a large sulphur-bottom whale, strengthens this statement. After prolonged study of the probable contours of the animal when in the flesh, Mr. W. K. Gregory concludes that it weighed about 38 tons. This is surely an immense weight, but the weight of a 75-foot whale has been estimated at no less than 63 tons. The length of the brontosaurus's skeleton is 66 feet and 7 inches.

NIAGARA FALLS POWER

The grandeur and natural beauty of Niagara Falls have been fruitful themes for the descriptive writers, the tourists, and, in fact, to all who have visited that wonderful display of natural forces. But it has been left for this practical and prosaic age to regard this vast natural power as a means of profit and to gauge its value as the servant of man. That the great force of falling water has been harnessed is probably known to all our readers, but to what extent the power has been utilized and in what manner is not generally known, and this will prove of interest to all who have seen the falls or have read of their extent and grandeur.

NIAGARA FALLS.—AMERICAN FALLS FROM GOAT ISLAND.

A recent writer visiting Niagara made a tour of inspection of the power plants and some of the industries there located, and has given us a fair idea of their extent and importance. Think of it—a million horse-power. The mind can scarcely grasp the immensity of the motive power thus brought into use which for centuries has been allowed to go to waste. But it has been awaiting the development of electrical energy. By the use of the turbine or other water-power wheels but a very small part of this immense power could have been utilized. For many years a paper mill received its power from the water of the rapids just above the falls, but that was before the transmission of power by electricity. Now the force of the mighty fall of water is used to generate electricity, and this is conducted to distant points for utilization in industrial establishments, the motive power for street railways, for lighting and other purposes.

There are now at the falls in successful operation five different hydroelectric plants, providing a total output of nearly 150,000 electrical horse-power. By electrical horse-power is meant the actual amount of electricity generated by the dynamos, since the water turbine does not transform 100 per cent. of the stored-up energy in the water into mechanical motion, but in practice it delivers from 75 to 85 per cent., the difference lost being due to friction and structural defects of the mechanism employed. On the American bank of the Upper Niagara River are located three of the largest plants and on the Canadian side are two small plants, as compared with those on the American side, since they develop only 11,600 horse-power, while the latter develop 150,000 horse-power.

In the year 1900 the International Niagara Commission was established, composed of eminent engineers, who were to pass upon the feasibility of the project, and when this was done a prize of $22,000 was offered for the best plan to be submitted. Thomas Evershed evolved the broad generalization which constitutes the present successful methods by which the power is economically utilized on the large scale.

Prior to this time any attempt to transmit large volumes of the electric current must have proved futile, for alternating current generators—the only kind that are capable of projecting the subtle energy to great distances with the smallest possible losses—were practically unknown. By using direct current dynamos the falls might have been tapped ten years before, but at that period there was little demand for electricity served at that immediate point of operation, since the electric street railway was just being introduced, and the electro-chemical industries, such as the making of aluminum, calcium, carbide, etc., were in their infancy.

The location of this plant is about a mile above the American Falls. A surface canal, 250 feet wide by 12 feet deep and 1,700 feet long, extends laterally from the river, and paralleling this is the wheel pit, as the location where the water turbines are placed is called, 425 feet long, 18 feet wide and 178 feet deep Extending from the base of the wheel pit a tunnel was dug that measured nearly 19 feet

wide, 21 feet high and 6,837 feet long, through which the water used flowed into the river below the falls. The civil engineering work completed, the hydraulic engineers took the next turn and began by installing ten turbines of 5,000 horse-power each—the same size and number as the steam units used for operating the subway—in the pit, the water being carried in them by steel penstocks or conduits, 7½ feet in diameter and 136 feet in length, the great tunnel serving as a tail-race. Here the electrical engineers collaborated with the hydraulic engineers. The work was finished by connecting the electric generators above, and the great innovation of supplying every industry with all the cheap light, heat and power that was needed and transmitting to the city of Buffalo energy for the operation of everything, from a 16 candle-power lamp to a street railway system, was inaugurated. These original installations fulfilled the strenuous conditions imposed upon them so well that a year or two later the number of turbines and generators was more than doubled, and these have been in active service ever since.

At present the Canadian companies are in the ascendancy, one company installing a 180,000 horse-power plant, and the other is completing the details for a 110,000 horse-power equipment. These are located about a mile above the Horseshoe Falls. The tail-races of these will empty into the river at a point immediately below the falls. A smaller plant, having a capacity of only 6,000 horse-power, is also being constructed near those just mentioned. On the American side of the falls the excavations for a plant have been begun that will develop 80,000 horse-power more, while the aggregate horse-power of the plants now in the course of construction makes a total of 553,500 horse-power, and this, added to the 146,500 horse-power already in operation, brings the grand total up to 700,100 horse-power. Arrangements have been provided by which these stations may add to their equipment, and with the other work in actual progress no less than a million electrical horse-power will be at the disposal of consumers. One of the most interesting hydro-electric stations, in virtue of the fact that it will take its water from below the falls, instead of above them, as the other companies do, is one contemplated. The plan is to excavate a tunnel which shall start from the head of the Whirlpool Rapids, leading to a point 8,000 feet down the river, known as Devil's Hole. The volume of water that will be carried will produce 200,000 horse-power.

The greatest undertaking, however, is the canal now being excavated from La Salle on the Upper Niagara River, to Devil's Hole, which will have a length of over 37,000 feet, most of which will have to be cut through solid rock. This canal will be of such proportions that the water supply will operate thirty-two electric generators of 10,000 horse-power each, and these will be connected directly to the turbine wheels on a horizontal shaft.

Buffalo thus far has been the one city benefited by the development of electric power at Niagara. It is only twenty miles away, and the losses due to transmission are practically nil. The street railway and all other places where light and power are used for any purpose are buyers of the Niagara product. A single company in Buffalo controls the entire supply. There are over 75 consumers in Buffalo, the smallest concern using only 2 horse-power, the largest over 2,000 horse-power, for the operation of their motors alone; these same firms use an aggregate number of 18,000 16 candle-power lamps. Of these companies thirty-six have abandoned steam power, while twenty-four new factories have been started in Buffalo, and thirteen works have moved into Buffalo to enable them to utilize this power. It will probably not be long before the power from Niagara will be utilized by the New York Central Railroad when it installs electromotives on that division of its system.

An investigation by competent electrical engineers of the maximum distance to which power can be economically transmitted resulted in the conclusion that under the most favorable conditions about 550 miles is the limit.—*American Exporter.*

Street scene at Port Antrim, Jamaica [W. I.] Photo by circulation manager Implement Age.

GOLD FILLINGS

Hippopotamus ivory, though still in demand, is by no means so valuable as it was a century ago, when it was used largely by dentists as a material for false teeth. Being harder and more dense than elephant ivory, it was particularly well adapted for the purpose, and fine tusks brought as much as seven dollars and fifty cents a pound.

Experiments have been made recently in the manufacture of artificial teeth from paper pulp, pressed to the hardness of stone. This, indeed, is just about the latest use for paper, which may some day take the place of porcelain for the purpose. As yet, however, no substance has proved so satisfactory as porcelain, the chief ingredient employed being kaolin.

False teeth are much more ancient than most people suppose. A gold plate with several such grinders attached was found not long ago in an Etruscan tomb, and the fact that the early Egyptians replaced lost teeth with artificial ones has been proved by the discovery of several in the jaws of mummies. The Egyptian teeth could hardly have been very efficient, inasmuch as they were of wood, tied with gold wire to the natural teeth between which they were inserted.

Twenty million false teeth are made and sold annually in the United States, a single manufacturer producing nearly one-half of the entire number. After being formed in moulds from the clay-stuff composition they are baked in ovens. For the hard enamel the requisite tints are supplied by an admixture of metallic oxides. Of course, perfectly white teeth would not look natural.

When a false tooth is inserted in anybody's mouth it must match the natural teeth not only in size but also in color, and accordingly more than fifty different shades or tints are produced. When full sets are furnished by the dentist, care is taken nowadays not to make the teeth too perfect and regular, lest they look unnatural, and occasionally spots of gold are actually burnished upon one or two teeth, to resemble fillings.

Fifty thousand ounces of platinum are used annually by manufacturers of porcelain teeth in this country. For filling real teeth 40,000 ounces of gold are employed in a twelvemonth. Thus, at a moderate calculation, it may be said that $1,000,000 worth of precious metals go each year into the mouths of the people of the United States.

CHINESE BREADFRUIT

The pomelo, sometimes called the Chinese breadfruit, a citrus-fruit which may be described as a cross between the orange and the grapefruit, combining the good points of both, is the subject of an interesting report by Mr. Anderson, the United States consul at Hangchow. Mr. Anderson regards it as the finest fruit grown in the far East. He believes that it might be introduced with profit into the southern United States. Already, it is understood, a few persons in this country are cultivating the pomelo, but not upon a commercial scale. In China, it is believed, this fruit has been cultivated for at least 2,000 years. The best pomelos in the world are said to come from a little valley near a large Chinese city named Chang Chew; lying inland from Amoy, and not yet opened to foreign trade. The summers in this valley are hot and rather damp, and the winters are without severe frosts.

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Under no circumstances do we allow commissions to advertising agents.

WONDERFUL CHICAGO

Chicago is one of America's most wonderful cities. Think of over forty-seven solid miles of buildings, costing approximately $62,000,000, being built in one year. The real estate transactions during the same period totaled approximately $140,000,000. Chicago's growth is substantial as well as rapid, and can best be appreciated by those who visit the city at intervals of a few months, when the many changes attract attention and excite amazement on each visit.

THE NOBEL PRIZES

The Nobel Prizes, for distinguished service in various departments of activity for the welfare of men, were awarded at Stockholm, December 10th. The prize in the department of physics was given to Prof. Philipp Meyer von Lenard, of Kiel University, for his works on cathode rays; in chemistry, to Prof. Adolf von Bäyer, of the University of Munich, for researches leading to the development of organic chemistry and the chemical industry; in medicine, to Prof. Robert Koch, of Berlin, for researches in connection with tuberculosis; in literature, to Henryk Sienkiewicz, the Polish novelist; and for the promotion of peace to Baroness von Suttner, of Austria, who has long been prominent in international peace movements. Each prize amounts to about $40,000.

AIRSHIP JOURNEY TO POLE

Mr. Walter Wellman, the correspondent of the Chicago *Record Herald*, who headed an unsuccessful polar expedition by ship and sledge several years ago, has been commissioned to build an airship, and with it go find the Pole, reporting by wireless telegraphy. M. Santos Dumont, the famous aeronaut, of Paris, is to act as consulting engineer in the construction and equipment of the airship, and has offered to accompany the expedition as director and guide. Mr. Wellman says that his airship is to be completed by May 1st, being constructed at Paris, and that the start will be made in July from Spitzbergen. The ship is to carry 5,500 pounds of fuel, and a boat-shaped car, in which five men may be comfortably housed, with food and supplies for seventy-five days; motor sledges to draw them over the ice in case of need and the wireless telegraph outfit. A guide rope of tapering steel is to drag at lower end over the ice, keeping the ship at a fairly stable height, and maintain the vertical stability of the craft.

MARSHALL FIELD

Marshall Field, the multi-millionaire and merchant prince of Chicago, died at the Holland House, New York, after a week's illness from pneumonia. His funeral took place at Chicago, and the 1,100 members of the Chicago Commercial Association suspended all business between the hours of 12 and 1 o'clock as a tribute of respect. Similar action was taken by the great department stores and by the board of trade. Mr. Field was known as the richest merchant in the world, his fortune being estimated at $150,000,000. His life story is that of a New England farmer boy who went West and grew up with the country, that is to say, grew up with Chicago. He was born in 1835.

ELECTRICITY NOT CONSUMED

Prof. W. E. Ayrton points out that the common expressions "buying electricity" and "consuming electric current" are misleading. No electricity is used up in lighting buildings, driving machinery, and propelling cars and trains. "Just as much electricity flows away per minute, through the return conductor, from your electrically lighted house as flows to it through the coming conductor. The electric current is like a butcher's cart carrying round meat—you no more consume current than you consume cart. It is not the vehicle but what it leaves behind that the consumers buy, meat in the case of the butcher's cart, and energy in the case of the electric current."

RESOURCES OF ALASKA

Alaska's gold product for 1905 would pay twice over the $7,200,000 which we gave for that province to Russia. And this is only one item in our annual income from that region Its furs, fisheries and minerals have yielded us $250,000,000 since our flag was raised over it Its resources in coal, iron ore and timber, none of which has been really touched yet, are inexhaustible. Its possibilities in agriculture and fruit raising are larger than its mineral resources. All that Alaska needs to develop these vast riches are railroads and wagon roads, and these are beginning to appear. Congress has neglected this vast and opulent region too long. This winter it should erect Alaska into a territory, provide for the creation of good roads and enact other needed legislation.—*Leslie's Weekly.*

EDISON ON ELECTRIC LIGHT

On another page we publish an account of Mr. Edison's views on the future of electricity. Mr. Edison believes that electric plants will be established at the mouths of the coal mines and the power will be transmitted by wire instead of the coal being carried by railroad; electric light will be cheaper than gas; great trunk railways will operate all their trains by electricity as soon as their owners find it is cheaper; electricity will take the place of horses; it will solve the traffic problem in cities and save $200,000,000 a year in stable rent in New York City; by wireless telegraphy we shall communicate with any ship in any sea; all the water power of the country will be used in generating electric power; he expects to see airships flying before his death; ships will cross the Atlantic in three days; power will be so cheap that new industries will be born; but the first thing to do is to discover the means of making electricity direct from coal, and 300,000 scientific men are seeking the way to do it.

THE AUTOMOBILE SHOW

The sixth annual automobile show at the Madison Square Garden, New York, marks a new stage in the evolution of the American automobile industry, namely, the disappearance of the one-seated runabout. The type of car now in greatest favor with American makers is the elaborate car designed to carry from five to seven persons.

PROF. LANGLEY'S AERODROME

In the latest volume of the Smithsonian reports Prof. S. P. Langley gives the first authoritative statement concerning the experiments with his aerodrome in 1903. The experiments were paid for by the War Department, and in consequence of their apparent failure Professor Langley has been unable to get another appropriation of money to continue them. But he asserts, and produces photographs in support of his statement, that on both occasions when his machine failed to make a successful flight, the real flying capacity of the apparatus was not tested at all. Accidents in the launching prevented the aerodrome from getting free in the air. Professor Langley believes that further experiments would result in perfecting the launching apparatus, and that then the aerodrome would prove its capacity to fly. "It is at the moment of success and when the engineering problems have been solved that a lack of means has prevented a continuance of the work."

REPORT OF THE ISTHMIAN CANAL COMMISSION

The annual report of the Isthmian Canal Commission for the year ending December 1, 1905, as presented to the Secretary of War of the United States contains the following statements covering the type of waterway and the engineering work accomplished:

The act approved June 28, 1902, pledged for the construction of the canal $145,000,000, of which it appropriated $10,000,000, this total being practically the estimated cost of the project submitted by the Isthmian Canal Commission of 1899-1901. That appropriation was made under conditions and circumstances almost identical to those that are followed for harbor and river works, and leaves no doubt that the project adopted by Congress was the one submitted by that Commission, and all construction work done thus far has been under and in accordance with that project.

The Commission appointed in March, 1904 had under consideration at the time it was disbanded in March, 1905, a project for a sea-level canal. As a sea-level canal, however, could not be built for the amount authorized by law, and inasmuch as there seemed to be a difference of opinion among engineers as to the best type of canal, the President, by Executive order, ordered a board of consulting engineers to convene in the city of Washington for the purpose of considering the type of canal to be constructed through the Isthmus of Panama.

The Isthmian Canal Commission by that order was directed to have all proposed plans in detailed form, with maps and surveys and other documents sufficient to enable the consulting engineers to decide questions presented to them. This was done, and the board met on September 1st, visited the Isthmus during October, and has been giving the subject careful study since. It is expected that the report of this board will be made to the Commission in a short time.

The work on the Culebra cut was undertaken with the idea that the excavation done would be useful in any plan or any type of canal that might be adopted. This is only true to a limited extent. No systematic organization for attacking this cut can be effected until it is known how much material is to be removed and the depth to which the cut is to be excavated. If 120,000,000 cubic yards are to be removed it must be attacked in an entirely different manner from what it would be if only 40,000,000 or 50,000,000 cubic yards were to be removed. If the sea-level type be adopted, about one-eighth of the total in that cut will be rock under water, whereas in the case of a lock-level canal, with a summit not less than 60 feet above tide, there will be none. It is, therefore, of the utmost importance that the type of canal be decided upon with the least possible delay.

While this necessary work of sanitating the Isthmus and providing for the health and welfare of the employees was in progress the task of purchasing, forwarding and distributing the enormous quantity of material and supplies of all kinds was receiving constant and most careful attention. The purchases included not only the items entering into the permanent plant, but also those required for the preliminary work. The approximate total cost of these purchases was about $9,000,000.

All expenditures up to the present time have been paid out of the appropriation of $10,000,000 made by the Congress on June 28, 1902.

In the act of Congress authorizing the construction of the canal and appropriating $10,000,000 for the preliminary work there was a further authorization for the Commission to enter into contracts for the work, with a total not to exceed $135,000,000, to meet which Congress would from time to time, as the necessities required, make suitable appropriation. Under the provision of this authorization the Commission has entered into contracts for materials and supplies for future delivery, which are essential to the construction of the canal, the orders for which must be placed considerably in advance of the time when they are to be needed, because the industries of the United States are so crowded with domestic business that immediate delivery of such articles cannot be made.

While this preparatory work has been in progress, very little has been done in the way of actual excavation. Eleven steam shovels have been at different times in operation, however, in the Culebra cut, which is the largest single factor in the construction of the canal, and approximately 1,000,000 cubic yards of material have been removed. By this work two things are being accomplished. First, the levels of the cut are being put in proper condition for the installation of the largest number of machines which can be effectively operated, and second, data are being gathered which will be useful in future estimates of the cost of canal construction.

In the Culebra work 2,600 men are now employed. Railway tracks and yards have been built, and dredging has been done at both ends of the canal so far as advisable, until the question of type of canal is decided. It should be understood that all the work done is applicable to any type of canal.

For a sea-level canal the construction of a dam at Gamboa to impound the freshet waters of the upper Chagres is essential in most of the plans which have been considered. The examinations and borings made by the French company were supplemented by others more extensive under the direction of the Commission, which establish the fact that a dam here is practicable. In connection with these examinations at the dam site, topographic surveys were extended over the valley of the upper Chagres to determine the area of the lake which would be formed by the dam, and also the feasibility of discharging the surplus waters of the river into the Atlantic or Pacific Ocean.

Borings have been made along the line of the canal at frequent intervals, from one end to the other, to determine the character of the material to be removed for any type of canal that may be adopted.

The question of water supply for Panama, Colon, and the camps along the line of the canal received early attention. The dam across the Rio Grande was raised so as to create a reservoir, from which the city of Panama derives an ample supply. Water was turned into the pipe lines June 26th. Up to September 30th more than half of the entire work of laying the mains and making house connections in the city of Panama had been completed.

The work in the Culebra cut was gradually expanded, until in June eleven steam shovels were in operation. The material, as shown by actual work performed and by numerous borings and test pits, is of a mixed character, varying in degrees of hardness from that of ordinary earth to hard trap rock, irregularly disposed, but nearly all of it requiring blasting to be economically handled. This work was undertaken chiefly to determine by actual experiment the cost of excavation; but inasmuch as the railroad tracks were laid in a temporary manner, the old French cars were of insufficient capacity, the dumps not well selected, and the housing and feeding of employees so unsatisfactory as to cause much sickness, the experiment cannot be regarded as a success. The cost of removing this material varied in different months from 43 cents to $1.53 per cubic yard.

The data now collected on the Panama Isthmus leaves little or nothing in that line to be desired in studies having for their object the determination of the type of canal. Few engineering works (possibly none) have ever been undertaken with more complete physical data available.

The question of labor is a grave and perplexing one. A sufficient supply of labor can be secured from nearby tropical islands and countries, so far as numbers are concerned. The question of quality is a very different matter. Unless a much greater efficiency can be developed than is secured at present it will be necessary to look elsewhere for a better class.

The present wage varies from 80 cents to $1.04 a day in gold. As compared with the best common labor in the United States its efficiency is rated at from 25 to 33 per cent. More than 80 per cent. of the employees of the canal are now and will continue to be alien laborers. A majority of the other 20 per cent. employed will be in a clerical, a supervisory, or in some other capacity to which the various labor laws of the United States are not applicable.

SPROUT, WALDRON & CO.

Sprout, Waldron & Co., Muncy, Pa., U. S. A., manufacture machinery for grinding all kinds of grain. They publish a catalogue which gives a full description of all kinds of French burr and attrition feed and meal mills, cottonseed and linseed oil cake mills and ore crushers, magnetic separators, corn shellers, etc. They will be pleased to send this catalogue to any of our readers on application.

AMERICAN MACARONI WHEAT

American farmers have been raising macaroni wheat from seed secured in the first place by the Department of Agriculture. Secretary Wilson says that these farmers will send 6,000,000 bushels of their crop to France, Italy and other parts of Europe this year. Half of this amount goes to the macaroni makers of France. Six million bushels is a small amount in comparison with the total wheat exports, but six years ago this country exported no wheat of this kind, and it was only five years ago that the first seed was distributed by the Department of Agriculture. Results of this kind amply justify the existence of the department.

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Given a fair wind, the big five- and six-masted schooners of our own marine develop great speed to-day, and their crews often have the pleasure, coming up the coast deep with cargo, of sailing pleasantly past some Norwegian or British tramp wallowing along on its most economical consumption at six or eight knots an hour. The six-master "Wells" is said to have beaten the mail-steamer to Havana several hours on her first voyage.

The palm for speed and swift voyages, however, must probably be awarded now to two huge German five-masted ships, from Hamburg, the "Preussen" and the "Potosi." The first of these has made the trip from Hamburg to Iquique, Chile, in fifty-seven days, and has done three hundred and sixty-eight knots in a day with one hour's run of seventeen knots. The best record of the "Potosi" is but half a knot short of that.

On the Great Lakes freight steamers often make extremely good speed, as the season is short, and the custom there is to crowd the greatest possible number of voyages into a year. Some years ago a seventeen-knot record from Buffalo to Chicago was claimed, and regular speed of fourteen knots or better is common. But on salt water, where life is more leisurely, steam-vessels still continue to jog along at an average gait of ten knots an hour or less,—twelve on the better ones,—and to fall behind their sailing rivals when the wind happens to favor the sailing vessels.

EXPORT IMPLEMENT AGE

POUR LA CIRCULATION À L'ÉTRANGER EXCLUSIVEMENT.

Journal indépendant exclusivement consacré aux intérêts du commerce d'exportation des machines agricoles, pompes, moulins à vent, outils de fermes, fournitures pour crèmeries et articles spéciaux de quincaillerie.

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Dans le Répertoire d'adresses à l'usage des acheteurs, dans la première partie de ce livre nous donnons les renseignements en français; nous avons recours à ce moyen afin de faciliter la correspondance avec les maisons qui font insérer des annonces dans ce journal.

Charrettes de voyageurs.

MM. D. F. Sargent and Son, de Geneseo, Illinois (Etats-Unis d'Amérique) constructeurs de charrettes de voyageurs a deux roues pour l'exportation, sont contraints d'occuper jour et nuit les forces de leur usine afin de pouvoir exécuter promptement leurs commandes. Ils font en ce moment une expédition de quatre wagons dans l'Amérique de Sud, et une autre dans l'Afrique de Sud.

Exportations de New York

Les marchandises importées par le port de New York, au cours de l'année, sont évaluées à 684,497,042 dollars; les marchandises importées l'année dernière s'élevaient à 600,170,033 dollars. Cette somme excède de 66 millions de dollars la valeur des marchandises importées au cours de n'importe quelle autre année précédente. Les produits domestiques exportés sont évalués à 506,448,437 dollars; on les évaluait, l'année dernière, à 493,698,208 dollars; les produits étrangers exportés sont évalués à 13,491,306 dollars; on les évaluait, l'année dernière à 13,102,304 dollars.

Le silicium, le métal le plus abondant dans le monde, mais jusqu'ici peu connu par suite de la difficulté qu'on éprouvait à le séparer de l'oxygène, peut s'obtenir maintenant en grandes quantités grace au four électrique. Il donne à l'acier de précieuses propriétés électriques, et l'on croit qu'il jouera un rôle important dans les alliages de fer.

Caractéristiques des Américains

Le habitants des autres pays ont des traits distinctifs marqués qui nous permettent de ne pas confondre les hommes d'un pays avec ceuv d'un autre. Beaucoup d'Américains ont peu de difficulté à distinguer un visiteur ou un émigrant anglais d'un Allemand, ou un Français d'un Italien, sans avoir recours pour cela à la différence de langues ou à l'aspect de la personne. Les Américains, toutefois, sont disposés à se considérer comme issus de trop de nationalités et, par conséquent, comme trop hétérogènes, pour constituer déjà un type à part.

Que cela soit une vue erronée est prouvé par la facilité avec laquelle les gens de tout le continent européen, depuis les monarques jusqu'aux garçons de café ou d'établissements de bains reconnaissent un Américain. L'Américain parle la même langue que l'Anglais, et l'un et l'autre ont une ressemblance assez marquée, mais, en dépit de ces faits, il est rare que l'on prenne l'un pour l'autre. LeLs Américains doivent donc avoir des traits distinctifs frappants qui font qu'on ne les confond pas avec les habitants des autres pays.

M. Tudor Jenks s'efforce, dans un article de revue d'énumérer nos traits distinctifs les plus marqués. Tout d'abord, l'Américain a une grande "vivacité d'intelligence." Il est prompt à voir le pourquoi et le comment des choses. Une éducation populaire, des changements fréquents de résidence et d'occupation, une vie de société démocratique, nous ont donné une grande "abondance de la petite monnaie de la vie" utile ou dans la conversation ou dans les affaires matérielles. Nous sommes portés à la loquacité, et notre loquacité prend souvent la forme d'une grosse "humour" qui nous est propre. Nous sommes intrépides. Les étrangers nous accusent parfois de forfanterie, de bravacherie, mais ils se gardent bien d'agir sur cette supposition. Nous sommes orgueilleux, mais non pas tant au sujet de nous-mêmes comme individus qu'au sujet de nous-mêmes comme nation. Nous sommes chevaleresque envers nos femmes; les étrangers croient que nous les gâtons elles et nos enfants par un excès d'indulgence. Nous sommes essentiellement pratiques. Nous sommes plus disposés que tout autre peuple à demander au sujet d'une affaire quelconque non pas ce que les autres en disent, mais ce que vaut réellement la chose, non pas ce que nos ancêtres auraient fait, mais ce que nous devons faire nous-mêmes.

A l'étranger, les Americains passent communément pour avoir la bosse du commerce très développée, on les taxe d'aimer l'argent pour l'argent. Pour beaucoup d'étrangers c'est la caractéristique la plus saillante des Américains. M. Jenks dit toutefois qu'il n'en est rien. Il avoue que nous recherchons l'argent avec plus d'ardeur que tout autre peuple, mais ce n'est pas parce que nous voulons l'argent, mais parce que nous voulons ce qu'il achète, et parce qu'il achète ici plus que nulle part ailleurs. Il y a beaucoup de serrures que les clés de l'argent n'ouvriront pas en Angleterre ou sur le continent européen, quelle que soit la valeur personnelle de celui qui le possède. "En Amérique, dit M. Jenks, le dollar ouvre toutes les portes, pourvu, qu'un homme soit ce-qu'il doit être." Que nous ne recherchons pas et n'aimons pas l'argent pour l'argent, se voit, dit-il, par la générosité avec laquelle nous le donnons et la prodigalité avec laquelle nous le dépensons.

La description que fait M. Jenks des caractéristiques américaines, semble, somme toute, assez exacte et raisonnable. LeLs particularités qu'il mentionne ne contribuent pas toutes à faire de nous un peuple parfaitement agréable et aimable. Elles indiquent toutefois un type d'hommes sains, vigoureux, indépendants, qui peuvent se remuer et se tracasser tout seuls sans l'affection et l'approbation du monde entier tant qu'ils retiennent son respect et le plient à leurs désirs.

Le système métrique.

A en croire le *Canadian Manufacturer*, une étude attentive de la question des poids et mesures révèle, le fait que dans les pays ou le système métrique a été introduit, ce n'est pas sa valeur réelle quil'y a implanté. Il n'aurait eu d'autre effect que d'ajouter à la confusion déjà grande du système des poids et mesures.

Les billets des banques nationales en circulation à l'heure actuelle représentent une valeur de plus de 500 millions de dollars. Ils ont augmenté de 110 pour cent dans l'espace de sept années environ. Au cours des neuf derniers mois seulement, 46 millions de dollars ont été ajoutés à circulation. Les ressources des banques du pays ont presque doublé.

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The Black Ball packet "Fidelio," a small ship of about five hundred tons, crossed, east-bound, in thirteen days and seven hours from her pier in New York. The "Dreadnaught," which is said never to have been beaten in a race, is reputed to have crossed at an average speed of sixteen knots an hour.

The British ship "Thermopylæ" made a wonderful voyage to Melbourne from London which was speedier than most freight voyages of to-day. It accomplished it in sixty days, or an average for the trip of twelve knots an hour, and afterward came home from China in ninety-one days.

Given a fair wind, the big five- and six-masted schooners of our own marine develop great speed to-day, and their crews often have the pleasure, coming up the coast deep with cargo, of sailing pleasantly past some Norwegian or British tramp wallowing along on its most economical consumption at six or eight knots an hour. The six-master "Wells" is said to have beaten the mail-steamer to Havana several hours on her first voyage.

The palm for speed and swift voyages, however, must probably be awarded now to two huge German five-masted ships, from Hamburg, the "Preussen" and the "Potosi." The first of these has made the trip from Hamburg to Iquique, Chile, in fifty-seven days, and has done three hundred and sixty-eight knots in a day with one hour's run of seventeen knots. The best record of the "Potosi" is but half a knot short of that.

On the Great Lakes freight steamers often make extremely good speed, as the season is short, and the custom there is to crowd the greatest possible number of voyages into a year. Some years ago a seventeen-knot record from Buffalo to Chicago was claimed, and regular speed of fourteen knots or better is common. But on salt water, where life is more leisurely, steam-vessels still continue to jog along at an average gait of ten knots an hour or less,—twelve on the better ones,—and to fall behind their sailing rivals when the wind happens to favor the sailing vessels.

EXPORT IMPLEMENT AGE

POUR LA CIRCULATION À L'ÉTRANGER EXCLUSIVEMENT.

Journal indépendant exclusivement consacré aux intérêts du commerce d'exportation des machines agricoles, pompes, moulins à vent, outils de fermes, fournitures pour crèmeries et articles spéciaux de quincaillerie.

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Dans le Répertoire d'adresses à l'usage des acheteurs, dans la première partie de ce livre nous donnons les renseignements en français; nous avons recours à ce moyen afin de faciliter la correspondance avec les maisons qui font insérer des annonces dans ce journal.

Charrettes de voyageurs.

MM. D. F. Sargent and Son, de Geneseo, Illinois (Etats-Unis d'Amérique) constructeurs de charrettes de voyageurs a deux roues pour l'exportation, sont contraints d'occuper jour et nuit les forces de leur usine afin de pouvoir exécuter promptement leurs commandes. Ils font en ce moment une expédition de quatre wagons dans l'Amérique de Sud, et une autre dans l'Afrique de Sud.

Exportations de New York

Les marchandises importées par le port de New York, au cours de l'année, sont évaluées à 684,497,042 dollars; les marchandises importées l'année dernière s'élevaient à 600,170,033 dollars. Cette somme excède de 66 millions de dollars la valeur des marchandises importées au cours de n'importe quelle autre année précédente. Les produits domestiques exportés sont évalués à 506,448,437 dollars; on les évaluait, l'année dernière, à 493,698,208 dollars; les produits étrangers exportés sont évalués à 13,491,306 dollars; on les évaluait, l'année dernière à 13,102,304 dollars.

Le silicium, le métal le plus abondant dans le monde, mais jusqu'ici peu connu par suite de la difficulté qu'on éprouvait à le séparer de l'oxygène, peut s'obtenir maintenant en grandes quantités grace au four électrique. Il donne à l'acier de précieuses propriétés électriques, et l'on croit qu'il jouera un rôle important dans les alliages de fer.

Caractéristiques des Américains

Le habitants des autres pays ont des traits distinctifs marqués qui nous permettent de ne pas confondre les hommes d'un pays avec ceuv d'un autre. Beaucoup d'Américains ont peu de difficulté à distinguer un visiteur ou un émigrant anglais d'un Allemand, ou un Français d'un Italien, sans avoir recours pour cela à la différence de langues ou à l'aspect de la personne. Les Américains, toutefois, sont disposés à se considérer comme issus de trop de nationalités et, par conséquent, comme trop hétérogènes, pour constituer déjà un type à part.

Que cela soit une vue erronée est prouvé par la facilité avec laquelle les gens de tout le continent européen, depuis les monarques jusqu'aux garçons de café ou d'établissements de bains reconnaissent un Américain. L'Américain parle la même langue que l'Anglais, et l'un et l'autre ont une ressemblance assez marquée, mais, en dépit de ces faits, il est rare que l'on prenne l'un pour l'autre. LeLs Américains doivent donc avoir des traits distinctifs frappants qui font qu'on ne les confond pas avec les habitants des autres pays.

M. Tudor Jenks s'efforce, dans un article de revue d'énumérer nos traits distinctifs les plus marqués. Tout d'abord, l'Américain a une grande "vivacité d'intelligence." Il est prompt à voir le pourquoi et le comment des choses. Une éducation populaire, des changements fréquents de résidence et d'occupation, une vie de société démocratique, nous ont donné une grande "abondance de la petite monnaie de la vie" utile ou dans la conversation ou dans les affaires matérielles. Nous sommes portés à la loquacité, et notre loquacité prend souvent la forme d'une grosse "humour" qui nous est propre. Nous sommes intrépides. Les étrangers nous accusent parfois de forfanterie, de bravacherie, mais ils se gardent bien d'agir sur cette supposition. Nous sommes orgueilleux, mais non pas tant au sujet de nous-mêmes comme individus qu'au sujet de nous-mêmes comme nation. Nous sommes chevaleresque envers nos femmes; les étrangers croient que nous les gâtons elles et nos enfants par un excès d'indulgence. Nous sommes essentiellement pratiques. Nous sommes plus disposés que tout autre peuple à demander au sujet d'une affaire quelconque non pas ce que les autres en disent, mais ce que vaut réellement la chose, non pas ce que nos ancêtres auraient fait, mais ce que nous devons faire nous-mêmes.

A l'étranger, les Americains passent communément pour avoir la bosse du commerce très développée, on les taxe d'aimer l'argent pour l'argent. Pour beaucoup d'étrangers c'est la caractéristique la plus saillante des Américains. M. Jenks dit toutefois qu'il n'en est rien. Il avoue que nous recherchons l'argent avec plus d'ardeur que tout autre peuple, mais ce n'est pas parce que nous voulons l'argent, mais parce que nous voulons ce qu'il achète, et parce qu'il achète ici plus que nulle part ailleurs. Il y a beaucoup de serrures que les clés de l'argent n'ouvriront pas en Angleterre ou sur le continent européen, quelle que soit la valeur personnelle de celui qui le possède. "En Amérique, dit M. Jenks, le dollar ouvre toutes les portes, pourvu, qu'un homme soit ce-qu'il doit être." Que nous ne recherchons pas et n'aimons pas l'argent pour l'argent, se voit, dit-il, par la générosité avec laquelle nous le donnons et la prodigalité avec laquelle nous le dépensons.

La description que fait M. Jenks des caractéristiques américaines, semble, somme toute, assez exacte et raisonnable. LeLs particularités qu'il mentionne ne contribuent pas toutes à faire de nous un peuple parfaitement agréable et aimable. Elles indiquent toutefois un type d'hommes sains, vigoureux, indépendants, qui peuvent se remuer et se tracasser tout seuls sans l'affection et l'approbation du monde entier tant qu'ils retiennent son respect et le plient à leurs désirs.

Le système métrique.

A en croire le *Canadian Manufacturer*, une étude attentive de la question des poids et mesures révèle, le fait que dans les pays ou le système métrique a été introduit, ce n'est pas sa valeur réelle quil'y a implanté. Il n'aurait eu d'autre effect que d'ajouter à la confusion déjà grande du système des poids et mesures.

Les billets des banques nationales en circulation à l'heure actuelle représentent une valeur de plus de 500 millions de dollars. Ils ont augmenté de 110 pour cent dans l'espace de sept années environ. Au cours des neuf derniers mois seulement, 46 millions de dollars ont été ajoutés à circulation. Les ressources des banques du pays ont presque doublé.

INTENTIONAL SECOND EXPOSURE

L'Americain de l'avenir

Au dire de M. Luther Burbank, l'éleveur de plantes et de fleurs, l'Américain de l'avenir doit être une espèce très améliorée de la race humaine. M. Burbank s'exprime ainsi:

Dans mon travail avec les plantes et les fleurs j'introduis ici la couleur, et là la forme, la dimension, le parfum, selon le produit désiré. Pour obtenir ces résultats, nous mettons à profit les leçons de la nature. Seules ses forces les plus puissantes sont employées. Tout ce qui a été fait pour les plantes et les fleurs, la nature l'a déjà accompli pour le peuple américain. Par le croisement des sangs, on a obtenu la force d'une part, l'intellectualité de l'autre, ou encore la force morale. La nature seule peut faire cela. On ne pouvait faire appel au travail de la tête et de la main de l'homme pour opérer le développement d'une race. Un croisement de sang préconcu, préparé de longue main, est une chose inconnue dans la formation des peuples et des nations. Mais quand la nature a déjà fait son devoir et que le croisement laisse un produit qui, somme toute, présente les meilleurs atrributs humains, ce qui reste à faire est l'œuvre du milieu.

L'homme n'a point encore atteint, tant s'en faut, la limite du meilleur. Le meilleur n'a pas encore survécu. Dans le procédé d'élimination le plus faible périra. Le meilleur de l'avenir n'est pas le meilleur du passé. Une éducation convenable enfantera une race d'hommes qui seront moralement beaux et intellectuellement parfaits. Je ne crois pas que l'homme ait atteint le plus grand qui soit en lui. Nous avons ce qu'on appelle communément les cinq sens, mais il y a des esprits puissants, dont le raisonnement est rarement en défaut, dont les méthodes sont froidement scientifiques, qui attestent qu'un sixième sens pourrait bien un jour se développer dans l'homme. Qui pourrait affirmer que de nouveaux sens ne se développeront pas dans l'homme au fur et à mesure des progrès de l'évolution. Dans toutes les écoles publiques du pays on étudie la psychologie, et cette étude conduira à de nouvelles connaissances dans la pensée psychique. L'homme des siècles futur pourrait bien être une créature fort différente de l'homme actuel. Il pourrait bien se faire de nous la même idée que nous nous faisons de nos ancêtres primitifs.

Je suis parfois épouvanté quand je vois augmenter la folie, les suicides, les meurtres, les maux du corps. Les statistiques nous apprennent bien des choses qui nous font nous arrêter, mais, après tout, le parti à prendre c'est celui de l'optimiste. Il viendra un temps où le corps de l'homme sera moins sujet aux mauj de tous genres. Dans les nations qui ne varient guère, la folie et le crime font comparativement peu de ravages, la moralité n'y est point exaltée, les génies y son rares. Ici, en Amérique, où la variation est extrême, les statistiques accusent un pourcentage de folie, de crimes, etc., plus élevé. Mais patience! laissons les années s'écouler et le milieu cristallisera la nation américaine. Ses éléments changeants s'unifieront, et l'extermination des mauvaises herbes laissera probablement le plus beau produit humain qu'on ait jamais vu.

La couleur, le parfum, la grosseur, la forme que la culture a déterminées dans les plantes auront leurs analogies dans l'être composite que sera l'Américain de l'avenir.

Mais qu'est-ce qui contribuera plus que n'importe quoi à activer ce développement? L'éducation bien comprise des enfants. N'alimentez pas l'enfant de religion dogmatique; donnez-lui la nature. Que son âme boive à tout ce qui est pur et bon. Que tout ce qui l'entoure soit agréable. S'il entre dans le monde avec une âme qui s'avance à tâtons dans l'obscurité, faites-lui voir et sentir la lumière. Ne lui instillez pas, dès le début de sa vie, la peur d'un outre-monde. Jamais la peur de l'enfer n'a rendu un enfant noble et bon. Laissez la nature lui enseigner en quoi consiste une vie bonne et convenable, et combinez avec cet enseignement une alimentation rationnelle. Voilà l'éducation qui fera de l'enfant le meilleur homme ou la meilleure femme. Mettez-le ou mettez-la en contact avec ce qu'il y a de meilleur autour de nous. Et il ou elle absorbera ce meilleur tout comme la plante absorbe le soleil et la rosée.

Notre grand President

La conclusion de la paix entre le Japon et la Russie n'est pas seulement le triomphe d'une sage diplomatie de la part des deux pays, c'est encore une victoire ajoutée à la liste déjà longue de celles qu'a remportées de président Roosevelt.

Quel autre homme public dans le monde aurait pu faire cette chose? Qui, parmi les hommes d'états et les souverains des nations, a eu l'habileté de discerner le moment propice, la sagacité de decouvrir la manière appropriée le courage de faire ce qu'il fallait faire? Quel est l'autre homme qui, y ayant mis la main, aurait pu mener l'entreprise à bonne fin?

Ce service rendu à l'humanite élève le président Roosevelt au rang des grands hommes des temps modernes. Les noms de Gladstone et de Bismarck ne sont pas plus grands et, sous certains rapports, le sont moins. Webster et Blaine ne sont assurément pas plus éminents. Seuls Lincoln et Washington parmi les Américains occupent une place plus élevée que notre sage, courageux, vaillant, bienfaisant président, qui ne se montre pas moins capable de réconcilier les nations que de faire la paix entre les élements industriels aux prises dans le pays.

Vogue des prodints amèricaines

M. Sammons, consul des Etas-Unis a Niuchwang a envoyé à Washington un rapport intéressant sur l'état du commerce et de l'agriculture en Mandchourie. Il s'exprime ainsi:

"C'est à leur excellence que les produits américains doivent de se bien vendre en Mandchourie. Les cotonnades américaines sont les meilleures qui soient sur le marché; on peut en dire autant du pétrole, se qui explique que ces produits se vendent en si grandes quantités. L'Amérique vend à la Mandchourie et le Japon achète à celle-ci plus que toute autre nation. Les consommateurs chinois disent que les cotonnades américaines ne sont pas faites pour l'apparence. D'un autre côté quelques-uns des produits similaires chinois et japonais sont une sorte d'imitation du produit américain et cela ajoute à la vogue des tissus qui font bon usage.

"Les Chinois de la Chine du nord sont, comme ceux de la Chine du Sud, des acheteurs soigneux, méticuleux. Ils achèteront ce qui leur est le plus profitable, pourvu que le commerce ne soit entravé par aucune restriction.

"Les Russes étant désormais écartés de ce marché, le pétrole américain y trouve un libre débouché. Pendant un temps, durant l'occupation russe, le produit américain fut menacé; certaines influences pesaient sur le marché local et lui faisaient accepter le produit russe. Les recettes dues au pétrole provenant de Philadelphie directement dépasseront, celles de 1904, qui n'avaient pourtant jamais été égalées, et les pétroles de l'Asie orientale auront peu de chance de barrer la voie au produit américain. Les bois de construction américains, les conserves, la farine, les cigarettes, les machines à coudre, les poëles pour la cuisine et le chauffage, trouvent un débouché en Mandchourie, et la demande présente pour ces articles et les articles similaires est ferme et continue.

Nourriture et Boisson

Dans le cours de l'année prenant fin au 30 juin 1904, les impôts sur les spiritueux et les liqueurs de malt ont rapporté au gouvernement 184, 893, 474 dollars. Cela représente un impôt de 2 dollars 26 sur chaque homme, femme et enfant des Etats-Unis, soit 11 dollars 30 par famille. La dépense annuelle totale en stimulants, y compris le café, le thé et le cacao, aussi bien que les boissons alcooliques, s'éleve à 1 milliard 350 millions de dollars. Plus de 85 pour cent de cette somme se dépense en boissons alcooliques.

Selon les rapports de Bureau des statistiques attaché au Ministre de Commerce et du Travail des Etats-Unis, la consommation du vin, des liqueurs de malt et des spiritueux a augmenté d'une façon constante au cours des dix dernières années. La consommation du vin a augmenté de 100 pour cent; celle du whisky de 46 pour cent; celle de la bière de 18 pour cent. Bien que la consommation ait augmenté d'une manière notable, il ne faudrait pas en conclure que la nation soit devenue plus intempérante, car la population a augmenté dans les mêmes proportions. L'assertion les prohibitionistes, à savoir que les dépenses en stimulants constituent le huitième des dépenses totales des gens en nourriture et en boisson, n'est pas non plus soutenue par les faits. M. Wright, commissaire du travail des Etats-Unis, a évalué à 827 dollars 19 le revenu annuel de chaque famille aux Etats-Unis. Il a fait voir qu'il faut dépenser 768 dollars 54 pour les nécessités de la vie. Sur cette somme, 327 dollars 10 sont employés pour la nourriture, le reste s'en va en loyers, intérêts, assurances, vêtements, etc. Ainsi est réfutée l'assertion que le huitième des dépenses pour la nourriture et la boisson est consacré aux stimulants. En réalité M. Wright a recherché la somme déboursée pour les liqueurs enivrantes, et la moyenne est de 12 dollars 45, et cette somme est considérée à part, elle n'est pas inclue dans les "dépenses pour la nourriture."

L'assertion que la classe ouvrière est celle qui consomme le plus de spiritueux est erronée. En un seul jour, le riche dépense autant en spiritueux pour lui-même, pour sa famille et pour ses amis que l'ouvrier dans une année entière. Nous pouvons donc voir ici que la pauvreté des masses n'est pas attribuable aux liqueurs fortes.

Le plus grand Moulin à vent de monde

La plus grand moulin à vent des Etats-Unis, sinon le plus grand du monde entier, vient d'être construit près de San Francisco (Californie). Ce moulin gigantesque est situé sur la plage même de l'océan, près des fameux "Seal Rocks." Il sert à élever l'eau dans le parc de Golden Gate et contribue pour sa quote-part à l'approvisionnement genéral. Ce magnifique parc renferme plus de 1,000 acres.

Il faut consommer journellement une énorme quantité d'eau pour en fournir suffisamment aux fleurs, aux arbustes, aux animaux du parc.

Comme on peut le supposer, l'eau fournie par ce moulin gigantesque n'est pas prise dans la mer; elle provient de plusieurs puits d'eau douce creusés près de la plage. L'eau salée, cela va sans dire, tuerait les plantes et les fleurs et ne saurait convenir à l'abreuvage des animaux.

Le volumineux, solide pylône de bois supportant les ailes a 150 pieds de haut. Il a 40 pieds carrés à la base, est très solidement fixé au sol, et s'élève en s'amincissant en cône. Chaque aile a 80 pieds à partir du centre ou moyeu, ce qui fait qu'elle décrit un cercle de 160 pieds de diamètre. Les garnitures des ailes ont six pieds de large et occupent presque toute la longueur des ailes colossales, ce qui permet de mettre à profit la plus grande quantité d'air possible.

Deux spécialités américaines

Nous sommes heureux de pouvoir attirer l'attention de nos lecteurs sur des gravures représentant deux spécialités américaines fort connues sur toutes les places du monde. Nous voulons parler de l'égreneuse de maïs et du moulin à farine "Black Hawk" (Faucon noir). Ces machines sont de petites machines, mais le travail qu'elles font est important, et les économies qu'elles permettent de réaliser chaque année répresentent une immense somme d'argent.

L'égreneuse de maïs "Black Hawk" est une machine ingénieuse dont toutes les pièces, soigneusement étudiées, concourent à la perfection du travail auquel elle est destinée. Elle peut égrener de six à quatorze boisseaux de maïs en épis par heure, ce qui suffit aux besoins du fermier ordinaire. Elle possède un avantage qui a sa valeur: c'est qu'elle est si facile à manœuvre qu'une femme ou un enfant peuvent la faire fonctionner. L'épi de maïs pénètre dans la machine, tous les grains sans exception sont arrachés de l'axe qui est rejeté, et seul le maïs égrené tombe dans la boite ou le tonneau.

Le moulin à farine "Black Hawk" marche à la main. C'est une machine de ménage et de ferme. Il moud le maïs, le blé, l'orge, le riz, le café, les pois, les haricots, le sel, etc., etc. On peut le régler de manière à moudre gros ou fin, et il donne les meilleures sortes de gruau et de farines de blé ou d'orge pour l'usage de la table.

La fabrique tout entière de M. Patch est consacrée à la construction de ces égreneuses et de ces moulins. M. Patch n'a pas d'autre occupation, tous ses soins vont à la construction des machines et au choix des meilleures matières premières. L'exportation reçoit une attention toute particulière. Les marchandises, si loin qu'elles aillent, arrivent toujours à destination en parfait état. Pour plus amples détails s'adresser à M. A. H. Patch, Clarksville, Tenn. (Etats-Unis d'Amérique).

On prétend qu'une lentille nouvelle donne des photographies présentant plus de contrastes. Elles seraient en relief comme les photographies examinées à l'aide du stéréoscope. La lentille est convexe concave, de sorte que les axes des rayons provenant des différents points de la photographie se recontrent dans l'oeil; sa longeur focale doit être égale à celle de la chambre noire prenant la photographie.

On rapporte que le Gulf Stream a changé son cours et qu'il coule bien plus près que d'habitude de notre côte de l'Atlantique. Le changement est dû croit-on, à la longue suite ininterrompue est vents du sud et du sud-est. On croit que jusqu'à un certain point la proximité de ce courant d'eau chaude a causé l'humidité excessive que l'on a constatée cet été à New York et dans d'autres villes du nord.

En raison importance sans cesse croissante du platine et de la rareté des sources d'approvisionnement, le "Geological Survey" se propose de faire une collection des sables lourds provenant de tous les placers du pays où l'on a trouvé quelque trace du précieux métal. Des experts seront alors envoyés dans les localités où les essais auront indiqué qu'une quantité suffisante de platine existe.

Les moulins à vent "Star"

L'usine de la Flint & Walling Manufacturing Company, située à Kendallville, Ind. (États-Unis d'Amérique), occupe tout le long de l'année des centaines d'ouvriers à la construction des moulins à vent "Star" pour les marchés américains ou extérieurs.

Grâce à une direction habile, cette compagnie s'est acquise la distinction de posséder l'usine de moulins à vent et d'appareils pour l'élévation de l'eau la plus vaste du monde, la mieux outillée, la plus moderne sous tous les rapports. Elle jouit de grandes facilités qui lui permettent d'exécuter avec promptitude les commandes pour n'importe quelle partie du monde. Elle donne une attention toute spéciale à la préparation et à l'emballage des marchandises destinées à l'exportation. Les instructions quant aux marques sont suivies à la lettre. Une longue expérience dans le commerce d'exportation est, sous ce rapport, un guide sûr et toujours écouté.

Pour bien des travaux et surtout pour l'élévation de l'eau, le moulin à vent est une machine économique et pleinement satisfaisante. Depuis quelques années on s'intéresse partout de plus en plus à l'emploi des moulins à vent, et partout marchands et particuliers s'accordent à dire que les moulins "Star" rendent de longs et excellents services. Ces moulins sont maintenant en usage dans tous les pays civilisés.

Les moulins à vent "Star" sont l'œuvre d'ouvriers habiles, la matière première dont ils sont faits est de toute première qualité, et ce sont là sans doute les raisons qui font qu'ils sont partout si hautement appréciés. Ils sont construits d'après des pricipes scientifiques que vient appuyer une longue expérience pratique.

Les personnes que la question intéresse feront bien de demander des brochures en anglais, en espagnol, en français ou en allemand, dans lesquelles ils trouveront tous les renseignements désirables sur ces produits. S'adresser à Flint & Walling Manufacturing Company, Kendallville, Ind. (Etats-Unis d'Amérique.)

Pompes et outils à foin Myers

Nos lecteurs liront avec interêt une brève description d'une grande industrie américaine, de la plus vaste fabrique de pompes et d'outils à foin de monde entier: nous voulons parler de la maison de MM. F. E. Myers & Bro., d'Ashland, Ohio, (Etats-Unis d'Amérique).

La fabrique occupe une vaste étendue de terrain, mais les chiffres sont plus éloquents que les plus belles paroles.

Les planchers des ateliers de l'usine ont une superficie de 350,000 pieds carrés, c'est-à-dire que si tous ces ateliers étaient au rez-de-chaussée ils occuperaient une superficie de six acres. Le chiffre annuel des affaires de cette maison s'élève aux millions; sa liste d'émargements est de 300 mille dollars, soit 25,000 dollars chaque mois de l'année; elle occupe 500 hommes, et sa liste de clients comprend 15,000 maisons de commerce réparties sur tous les points du globe. La production journalière de cette vaste usine est suprenante; elle comprend plus de deux milles de rails pour portes, 700 poulies de suspension pour portes, 300 appareils à décharger le foin, 500 fourches à foin, 600 pompes, 1,200 poulies, des échelles de magasin, des crampons pour rateliers à foin, etc. Ces chiffres sont étourdissants, et l'on peut bien naturellement se demander où cette maison va s'arrêter.

MM. Myers and Bro. ont aux Etats-Unis cinq succursales qui distribuent les produits de l'usine, une maison d'exportation à New York, plus de 350 maisons de vente au détail et plus de 30 voyageurs de commerce qui visitent toutes les parties du pays.

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La Maquinaria Americana Sobresale

La maquinaria agricola americana sobresale por su ligereza y fortaleza. Mientras que las maquinas fabricadas en Alemania, Francia é Inglaterra son más sólidas en apariencia, no hacen un trabajo más fuerte ni duran más tiempo que las ligeras y elegantes máquinas americanas. La razón es porque nuestros fabricantes refuerzan sus máquinas en aquellos puntos que tienen que resistir la más fuerte tensión, pero donde no es necesario que sean pesadas y fuertes las partes ahorran en el material y el peso. Una máquina fuerte, al mismo tiempo que ligera, funciona con facilidad, requiere menos fuerza de tracción y ahorra considerablemente el costo del transporte.

La maquinaria agricola americana ha vencido en alto grado las preocupaciones contra su uso por su apariencia ligera, y ha pasado con buen éxito las más duras pruebas en los campos de todos los paises del mundo.

Les moulins à vent "Star"

L'usine de la Flint & Walling Manufacturing Company, située à Kendallville, Ind. (Etats-Unis d'Amérique), occupe tout le long de l'année des centaines d'ouvriers à la construction des moulins à vent "Star" pour les marchés américains ou extérieurs.

Grâce à une direction habile, cette compagnie s'est acquise la distinction de posséder l'usine de moulins à vent et d'appareils pour l'élévation de l'eau la plus vaste du monde, la mieux outillée, la plus moderne sous tous les rapports. Elle jouit de grandes facilités qui lui permettent d'exécuter avec promptitude les commandes pour n'importe quelle partie du monde. Elle donne une attention toute spéciale à la préparation et à l'emballage des marchandises destinées à l'exportation. Les instructions quant aux marques sont suivies à la lettre. Une longue expérience dans le commerce d'exportation est, sous ce rapport, un guide sûr et toujours écouté.

Pour bien des travaux et surtout pour l'élévation de l'eau, le moulin à vent est une machine économique et pleinement satisfaisante. Depuis quelques années on s'intéresse partout de plus en plus à l'emploi des moulins à vent, et partout marchands et particuliers s'accordent à dire que les moulins "Star" rendent de longs et excellents services. Ces moulins sont maintenant en usage dans tous les pays civilisés.

Les moulins à vent "Star" sont l'œuvre d'ouvriers habiles, la matière première dont ils sont faits est de toute première qualité, et ce sont là sans doute les raisons qui font qu'ils sont partout si hautement appréciés. Ils sont construits d'après des pricipes scientifiques que vient appuyer une longue expérience pratique.

Les personnes que la question intéresse feront bien de demander des brochures en anglais, en espagnol, en français ou en allemand, dans lesquelles ils trouveront tous les rensignements désirables sur ces produits. S'adresser à Flint & Walling Manufacturing Company, Kendallville, Ind. (Etats-Unis d'Amérique.)

Pompes et outils à foin Myers

Nos lecteurs liront avec interêt une brève description d'une grande industrie américaine, de la plus vaste fabrique de pompes et d'outils à foin de monde entier: nous voulons parler de la maison de MM. F. E. Myers & Bro., d'Ashland, Ohio, (Etats-Unis d'Amérique).

La fabrique occupe une vaste étendue de terrain, mais les chiffres sont plus éloquents que les plus belles paroles.

Les planchers des ateliers de l'usine ont une superficie de 350,000 pieds carrés, c'est-à-dire que si tous ces ateliers étaient au rez-de-chaussée ils occuperaient une superficie de six acres. Le chiffre annuel des affaires de cette maison s'élève aux millions; sa liste d'émargements est de 300 mille dollars, soit 25,000 dollars chaque mois de l'année; elle occupe 500 hommes, et sa liste de clients comprend 15,000 maisons de commerce réparties sur tous les points du globe. La production journalière de cette vaste usine est suprenante; elle comprend plus de deux milles de rails pour portes, 700 poulies de suspension pour portes, 300 appareils à décharger le foin, 500 fourches à foin, 600 pompes, 1,200 poulies, des échelles de magasin, des crampons pour rateliers à foin, etc. Ces chiffres sont étourdissants, et l'on peut bien naturellement se demander où cette maison va s'arrêter.

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Como puede suponerse, el agua sacada por ese enorme molino de viento no se toma del oceano, sino de varios grandes pozos de manantial cerca de la playa. El agua salada, por supuesto, mataria las plantas y las flores, y no seria potable para los animales.

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La Maquinaria Americana Sobresale

La maquinaria agricola americana sobresale por su ligereza y fortaleza. Mientras que las máquinas fabricadas en Alemania, Francia é Inglaterra son más sólidas en apariencia, no hacen un trabajo más fuerte ni duran más tiempo que las ligeras y elegantes máquinas americanas. La razón es porque nuestros fabricantes refuerzan sus máquinas en aquellos puntos que tienen que resistir la más fuerte tensión, pero donde no es necesario que sean pesadas y fuertes las partes ahorran en el material y el peso. Una máquina fuerte, al mismo tiempo que ligera, funciona con facilidad, requiere menos fuerza de tracción y ahorra considerablemente el costo del transporte.

La maquinaria agrícola americana ha vencido en alto grado las preocupaciones contra su uso por su apariencia ligera, y ha pasado con buen éxito las más duras pruebas en los campos de todos los países del mundo.

INTENTIONAL SECOND EXPOSURE

Rásgos Caracteristicos Americanos

El pueblo de otros paises tiene marcados rasgos caracteristicos por los cuales podemos distinguir fácilmente las diferentes nacionalidades. Muchos americanos podrían distinguir con facilidad á un visitante inglés de un inmigrante alemán ó un francés de un italiano, sin atender á la diferencia entre ellos en idioma y apariencia personal. Los americanos están dispuestos á considerarse, sin embargo, como descendientes de muchas nacionalidades, y, de consiguiente, demasiado heterogenos todavia para constituir un tipo peculiar de gente.

Que semejante modo de ver es erroneo lo prueba la facilidad con que todas las gentes del Continente europeo, desde los monarcas hasta el último mozo de café ó de casa de baños reconocen á un americano. El americano habla el mismo idioma que el inglés y ambos son muy parecidos, pero á pesar de esto muy raramente se toma al uno por el otro. Los americanos deben tener evidentes peculiaridades de modales y de carácter que los distingue de todos los demás.

Tudor Jenks, en un artículo de revista trata de enumerar nuestros más salientes rasgos caracteristicos. En primer lugar somos distinguidos por nuestra inteligencia: somos listos, agudos, rápidos de comprención. La educación, los frecuentes cambios de residencia y ocupación y la vida democráticamente social nos han proporcionado una abundancia de datos, bien sea para la conversación, ó para tratar de asuntos más materiales. Tenemos una propensión á la locuacidad, y esta locuacidad toma á menudo la forma de un humor burlesco peculiarmente nuestro. Somos intrépidos. LLos extranjeros algunas veces nos acusan de ser jactanciosos, de ser amigos de echar bravatas, aunque siempre se guardan bien de obrar bajo semejante suposición. Somos vanagloriosos, pero nos vanaglorianos menos de nosotros mismos individualmente que de nosotros colectivamente como nación. Somos caballerosos con nuestras mujeres. Los extranjeros creen que las mimamos demasiado tanto á ellas como á nuestros niños, siendo demasiado indulgentes con ellos. Somos esencialmente prácticos. Estamos más dispuestos que ninguna otra gente á preguntar, tratándose de cualquier materia, no lo que otros dicen sobre ella, sino cuál es el hecho; no lo que hicieron nuestros antepesados, sino lo que debemos hacer nosotros.

La opinión está muy generalizada en los paises extranjeros de que los americanos son en extremo mercantiles; que aman el dinero por el mismo dinero. Muchos extranjeros consideran que éste es el más marcado rasgo característico de los americanos. Mr. Jenks sostiene que esto no es verdad. El admite que nosotros buscamos el dinero con más ardor que ningún otro pueblo; pero que no es porque amemos el dinero mismo, sino porque queremos todo lo que puede comprar el dinero, y porque aqui puede comprar más que en ninguna otra parte. Hay muchas cerraduras que no puede abrir la llave del dinero en Inglaterra ni en el Continente europeo, por más que valga su poseedor. "En América," según dice Mr. Jenks, "el 'dollar' abre todas las puertas, con tal que un hombre sea lo que debe ser." Que nosotros no buscamos y amamos el dinero por su propio mérito, dice él, lo demuestra la generosidad con que lo damos y la prodigalidad con que lo gastamos. La descripción que hace Mr. Jenks de los rasgos característicos de los americanos parece tener algo de verdad y de justicia hasta donde va; pero las peculiaridades que menciona no son á propósito para hacer un pueblo agradable y amable. Indican, sin embargo, un tipo de hombre sano, vigoroso, independiente, que puede pasarse sin el afecto y la entera aprobación del mundo, siempre que tenga su respeto, y pueda valerse de él para sus fines.

El Tiro Aereo al Blanco

Durante los recientes experimentos llevados á cabo por M. Berteaux, el Ministro de la Guerra francés con el globo dirigible de Lebaudy se arrojaron con exactitud mortal unos torpedos deste una altura de 400 pies sobre la tierra contra blancos de veinte y cinco pies en cuadro. Se halló que la nave aérea podía viajar con una velocidad de treinta y cinco á cuarenta kilómetros por hora y permanecer en el aire por seis horas á lo menos. Subió fácilmente hasta una altura de 1,500 yardas, y sus pasajeros pudieron tomar fotografías de baterías y tropas, fotografías que podrían ser útiles en un ataque contra la ciudad. El motor del globo tenía una fuerza de cuarenta caballos y la envoltura ó saco de gas tenia un doble espesor de tela de seda cubierta con una capa de caucho líquido que reducía á un dos porciento la pérdida diaria de gas. Se halló que esa envoltura era tan elástica, que las balas de fusil no podían agujerearla, ó que le hacian un agujerito han pequeño que el escape de gas era insignificante, cerrándose enteramente á menudo la herida luégo que pasaba la bala. A una altura de 200 á 500 yardas la artillería en los carros de motor no podía acertar á herir el globo y finalmente se declaró que para las operaciones de la guerra su globo había pasado por todas las pruebas con buen éxito, y que era éste una nueva y terrible adquisición.

Los Molinos de Viento "Star"

En la planta de la Flint & Walling Mfg. Co., locaizada Kandallville, Ind., U. S. A., se emplean constantemente durante todo el año centenares de obreros fabricando los Molinos de Viento "Star" para los mercados americanos y extranjeros.

Un manejo asiduo y perspicaz le ha ganado á ese Compañia la distinción de tener la más moderna, más grande y mejor habilitada planta del mundo, que produce exclusivamente molinos de viento y artículos para el abasto de agua. Con sus excelentes facilidades pueden despachar con prontitud todos los pedidos para la exportación á cualquiera parte del mundo. La preparación y empaque de sus productos para la exportación reciben su más esmerada atención, y cumplen cuidadosamente con las instrucciones que reciben con respecto á las marcas. Comprenden perfectamente bien lo que es necesario en este particular, habiéndoselo enseñado su larga experiencia en el comercio de exportación.

Para various objetos, y especialmente para el de sacar agua por medio de la bomba es económico y digno de toda confianza el Molino de Viento. En los últimos pocos años ha aumentado materialmente en todo el mundo el interés en el uso de los Molinos de Viento. Que los Molinos de Viento "Star" dejan perfecta y constantemente satisfechos á cuantos los usan, conceden los negociantes y compradores particulares en todas partes. Estos Molinos de Viento están hoy en uso en todos los países en que existe la civilización.

Una mano de obra hábil y un material estrictamente de primera clase hacen eminentemente satisfactorio para el comercio el Molino de Viento "Star." Se fabrican bajo principios científicos, y con la ventaja de muchos años de experiencia práctica.

Los que se interesen en estos aparatos deberían escribir, pidiendo los libritos en inglés, español, francés ó alemán, en que se dan completos informes sobre estos molinos de viento, dirigiéndose á Flint & Walling Mfg. Co., Kendallville, Ind., U. S. A.

La Paz de Portsmouth

Un completo protocolo de todas las cuestiones suscitads entre los representantes de Rusia y el Japón para el arreglo de la paz se anunció en la conferencia de Portsmout, N. H., habiendo abandonado finalmente el Japón su reclamo de una indemnización de $600.000,000, y ofrecido dejarle á Rusia la mitad septentrional de la isla de Sakhalin, hoy ocupada por las fuerzas japonesas. El Japón había abandonado antes su demanda de los buques de guerra rusos encerrados y la limitación de las fuerzas navales de Rusia en el Oriente. Por la otra parte se habian hecho anteriormente ocho concesiones, á saber: la preponderancia del Japón en Korea, la evacuación militar de Manchuria por los Rusos y los japoneses, el traspaso por Rusia al Japón del arriendo de la Peninsula Liaotang, el puerto Arturo y Dalny; el reconocimiento de la integridad de China por ambas potencias; el traspaso de todas las municiones y propiedades públicas del puerto Arturo y Dalnay al Japón para confirmar su ocupación militar; el traspaso al Japón del ferro-carril entre el puerto Arturo y Harbin; la retención por Rusia de la linea principal del ferro-carril de Manchuria, y la concesión al Japón del derecho de pescar en las costas de Siberia. El costo de cuidar de los prisioneros lo pagarán proporcionalmente ambas partes.

Todas las campanas de iglesia y de incendios de Portsmouth se echaron á vuelo y los silbatos de los vapores resonaron cuando se recibió la noticia de haberse celebrado el tratado de paz. Los enviados de Rusia y sus simpatizadores se regocijaron por lo que consideraron una rendición del Japón. M. Witte y su cólega, el Barón Rosen, se congratularon por haber ganado una victoria diplomática al obtener la paz sin pagar un centavo como tributo—"Pas un sou," como declaró el gigantesco enviado ruso en un francés expresivo á los corresponsales periodísticos al volver á su hotel. Los enviados del Japón, el Barón Komura y Mr. Takahira, por otra parte, entristecidos rehusaron ser entrevistados.

En todo el mundo se le atribuyó la causa principal de haberse logrado la paz al Presidente Roosevelt, quien, en virtud de su posición oficial y la energía de su carácter personal, mantuvo junto á los enviados diplomáticos mientras se apelaba á sus respectivos soberanos. Cosa bien sabida es que ni el Barón Komura ni Mr. Takahira querian ceder el punto de la indemnización; pero otro representante japonés, el Barón Kancko, el agente confidencial del Mikado, estaba en constante comunicación con el Presidente, y por medio de Kancko, el más antiguo estadista de Tokio, se hizo ver al Emperador del Japón lo acertado que era anteponer el honor y la humanidad á una cuestión puramente monetaria. Después de todo, el Japón obtuvo todo lo que pretendía al declarar la guerra, á saber una posición en Asia que le asegura su existencia nacional, y su rango en la facilia de las naciones.

Medidas se tomaron inmediatamente para la suspensión de las hostilidades y la redacción de un tratado formal que se firmaría en Washington. Los términos del tratado de paz son en extremo impopulares en el Japón.

La guerra asi terminada principió el 4 de Febrero de 1904, con el ataque de la escuadra japonesa á la escuadra rusa en el puerto Arturo. Duró pues quinientos y veinte y siete días, con un costo que se calcula en $2,000.000,000 para Rusia, y $1,500.000,000 para el Japón. Los rusos tuvieron 420,000 bajas en las batallas, y el Japón 170,000, mientras que la Rusia perdió 73 buques de guerra y el Japón solamente 12.

Felicitaciones de parte de los monarcas, estadistas y filántropos de todas partes del mundo llovieron sobre el President Roosevelt, mientras que el último en su respuesta al Barón Komura felicitó al Emperador del Japón por la sabiduría y magnanimidad que desplegaron tanto él como su pueblo. No obstante, el Presidente dijo que estaba diespuesto á "silvar bajo" mientras no se extendiese y firmase el tratado formal de paz.

Dos Especialidades Americanas

Nos complacemos en poder mostrarles á nuestros lectores dos grabados ilustrativos de dos especialidades americanas conocidas extensamente en todos los mercados del mundo. Nos referimos á la Desgranadora de Maiz "Black Hawk" y al Molino "Black Hawk." Estas máquinas son de tamaño pequeño, pero hacen un trabajo muy importante, y el ahorro que anualmente proporciona su uso asciende á una inmensa cantidad de dinero.

La Desgranadora de Maiz "Black Hawk" es una máquina muy ingeniosa y todos los detales de su mecanismo estan construidos para hacerla perfecta en su operación. Tiene capacidad para desgranar de seis á catorce "bushels" de mazorcas de maiz por hora, siendo, de consiguiente, bastante grande para subvenir á las necesidades de una hacienda mediana. Una de sus más notables ventajas consiste en que se la puede hacer funcionar con tanta facilidad, que una mujer, y hasta un muchacho puede usarla. No hay más que echarle la mazorca dentro de la máquina, hacerla funcionar y ésta desprende de la mazorca hasta el último grano, botando luégo fuera la tusa pelada, y echando sólo el grano limpio en la caja ó barril.

El Molino "Black Hawk" es para el uso á mano en la casa ó en la finca. Muele el maiz, el trigo, el centeno, el arroz, el café, los guisantes, fréjoles, salt, etc. Se puede ajustar para moler grueso ó tan fino como se requiera, y hace la mejor harina de maiz ó de centeno para el uso de la mesa. Este Molino se fabrica con el mayor esmero, y se construye de modo que toda sus partes son de recambio, y las puede poner y quitar cualquiera sin herramientas especiales.

La fábrica entera de Mr. Patch se dedica exclusivamente á la fabricación de esas des granadoras y molinos. El no tiene nigún otro negocio, y esta circunstanica asegura la más esmerada construcción y los mejores materiales. El negocio de exportación recibe su especial atención. Sus productos se empacan para ir á cualquiera distancia y sufrir cualquier tratamiento, llegando, sin embargo, en buena condición á su destino. Completos informes y pormenores sobre estas máquinas les pueden obtener los que se interesen en ellas, dirigiéndose á Mr. A. H. Patch, Clarksville, Tenn., U. S. A.

En la Isla de Luzón, una de las Filipinas, ha descubierto un americano un lirio ó tulipan con una flor negra de ocho á nueve pulgadas á su través. Florece antes de que aparezcan las hojas y tiene un olor de carne corrompida que le atrae los insectos para el cruzamiento de la fertilización. Crece á una altura de menos de un pié y sólo á la sombra de una densa vegetación. Trastorna nuestras ideas sobre la pureza del lirio, y nos hace acordar del buitre entre las aves.

A causa de la importancia en aumento contante del platino, y las limitadas procedencias disponibles, el Departamento Geológico se propone colectar las pesadas arenas de los yacimientos, donde se han encontrado vestigios de ese metal. Expertos se inviarán luego á aquellas localidades donde las pruebas hechas han demostrado que existe en grandes cantidades ese metal.

El Hacendado de Campo Americano

Otro Año de Prosperidad sin Igual para los Hacendados de Campo de este país se ha añadido á la muy notable serie de Años prósperos que les ha cabido á Ningunos Otros Hacendados de País alguno en los Anales de la Agricultura del Mundo. La Producción ha sido sin igual: su valor ha llegado á los más altos guarismos jamás obtenido. El Valor del Sabrante Nacional de los Hacendados mantiene todavía la magnitud que ha creado un Balance Comecial, con las Sucesivas Adiciones por muchos Años, suficiente para convertir esta Nación de Deudora en Acreedora. Continúan los Ahorros sin precedente que han confundido á los Bancos ó Cajas de Ahorros por el volumen de sus riquezas, y Perturbado á los Hacendados por no poder hallar en qué invertir su dinero; y, como si todo esto no fuese Indicación de un alto grado de bienestar, el valor de las mismas fincas ha aumentado de un modo Fabuloso.

Jamás antes ha sido tan inmensa la producción agrícola, ni han alcanzado tan altos precios las cosechas. La pérdida parcial de dos ó tres cosechas de segunda clase no ha hecho impresión aparente en el asombroso conjunto de todas las cosechas. La producción que ha enriquecido á los hacendados en 1905 jamás ha llegado en éste ó en ningún otro país, á tan estupenda suma, ascendiendo el valor del fruto de la inteligencia, los brazos y la maquinaria á más de $6,450,000,000.00 áseis mil cuatrocientos cincuenta millones de pesos oro americano).

La deducción de la riqueza producida, según el informe del año pasado, para alimentar el ganado y otros animales no se expresa este año, porque la duplicación de la riqueza producida en el consumo de productos por los animales de las fincas compensa con mucho el valor de los productos consumidos, y es imposible calcular ó averiguar dicho consumo y dicho producto.

Se pudo suponer razonablemente en 1904 que la riqueza producida por los hacendados había alcanzado un valor que no se podría igualar en algunos de los años siguientes: pero aquel valor fué excedido en 1905 con el aumento de $256.000,000.00, así como el valor de la producción de 1904 excedió en $242.000,000.00 el de la producción de 1903.

El gran total de la riqueza producida por las haciendas de campo en 1905 excede en un 4 por ciento la de 1904: es 8 por ciento mayor que la de 1903: y sobrepuja en un 36 por ciento los guarismos del censo de 1899, y esto después de un curso de tiempo de 6 años solamente.

Si no hay una decaída en la alta posición que hoy ocupa el hacendado de este país como productor de riqueza, y de aquí á tres años echa una mirada hacia atrás y suma las cantidades de las riquezas que ha producido durante estos diez años, hallará que el elemento agrícola, ó un 35 por ciento de la población de este país ha producido en dichos diez años una summa igual á una mitad de toda la riqueza nacional producida por el trabajo del hombre, y compuesta de los sobrantes y ahorros de tres siglos.

Máquina para los Criadores de Aves de Corral

La nueva Cortadora de Trébol es una nueva máquina ofrecida recientemente en el mercado por la Silver Mfg. Co., de Salem, Ohio, U. S. A.

Con el fin de satisfacer la demanda universal de una máquina de este género se ha diseñado ésta especialmente para cortar ó picar la alfafa, el trébol, etc., para alimentar las aves de corral. Hace algún tiempo que se sentía la falta de una máquina semejante, pues ha sido demostrado por los criadores de aves de corral que la comida picada es una de las necesidades para criar dichas aves con buen éxito.

Con el objeto de asegurar el fácil funcionamiento se ha provisto la máquina de una rueda volante pesada, y habiéndola sometido á pruebas prácticas, se ha demostrado que corta ó pica con mayor rapidez que otras máquinas que cuestan casi el doble.

Otra importante ventaja en la construcción de esta picadora de trébol consiste en ser ajustable la plancha cortadora, permitiéndole así al operador conservar siempre en la mejor condición posible el mecanismo cortador.

Otra razón por la cual funciona con facilidad esta máquina es que su cuello es más ancho que el de ninguna otra cortadora de esta clase, teniendo así mayor espacio donde esparcir el trébol, y cotándolo, de consiguiente, con mucho mayor facilidad que las máquinas de cuello angosto.

Esta cortadora de trébol tiene cuatro cuchillos espirales de 8 pulgadas en un sólido centro y corta en pedacitos de un ⅛ de pulgada. Largo de la máquina, 24 pulgadas: largo de la caja, 18 pulgadas; mayor anchura de la caja, 10 pulgadas; ancho de la caja en el cuello, 8 pulgadas. Corta con facilidad un "bushel" de trébol en diez minutos. Se monta en un cajón ó banco de la altura debida para facilitarle su manejo al operador.

Los fabricantes hacen una especialidad de su comercio de exportación, y contestarán con claridad y prontitud todas las preguntas que se les haga. La firma solicita correspondencia, y los que se interesen deberían escribir á la Silver Mfg. Co., Salem, Ohio, U. S. A.

Bombas y Herramientas para Heno de Myers

Nuestros lectores se interesarán en la lectura de una breve descripción de una gran industria americana: la fábrica de bombas y herramientas para henear más grande del mundo, la casa de F. E. Myers & Bro., de Ashland, O., U. S. A. Los edificios de la fábrica de esa grande institución ocupan una gran extensión de terreno. Algunos guarismos relativos á esta empresa interesarán.

Las fábricas cubren un total de 350.000 pies cuadrados de espacio de suelo: seis "acres" se requerirían para darles el area requerida por los talleres que hoy tienen. El valor de los negocios que hacen al año requerirían para expresarse siete guarismos. La cantidad de dinero que paga ánualmente á sus empleados y obreros asciende á $300.000.00, ó $25.000.00 cada mes del año; da ocupación á 500 hombres, y la lista de sus parroquianos llega á un total de 15.000 hombres de negocios ó casas en todo el mundo La producción de esa planta en un año es maravillosa. El producto diario de esa gran fábrica y su fuerza de operarios incluye más de dos millas de vias de puerta, 700 colgantes de puerta, 300 descargadores de heno, 500 horquillas para heno 600 bombas, 1,200 poleas, escaleras de almacén, cepos de enrejado de pesebre, etc. Estos son guarismos asombrosos, y one instintivamente preguntará "¿Adónde va todo eso?"

La Compañía tiene en los Estados Unidos cinco casas sucursales para su distribución, una casa para la exportación en Nueva York, más de 350 casas para la venta á destajo, y más de 30 agentes viajeros que van á todas partes del país.

Tienen agencias en Francia, Italia, Inglaterra, Rusia, Noruega, Suecit, el Africa del Sur, Dinamarca, Austria, Sud América y Australia, para que sea universal la venta de sus productos. En toda la extensión de la tierra son conocidas las bombas de Myers. Dondequiera que ha llegado, aunque sea de paso, la civilización es reconocida la marca industrial de Myers como un emblema del mérito y la utilidad.

Aquellos de nuestros lectores que deseen familiarizarse con lo mejor que producen los Estados Unidos en el ramo fabril de bombas y herramientas para el heno no deberían perder tiempo en enviar por el catálogo de esa empresa, el cual se puede obtener gratis dirigiéndose á F. E. Myers & Bro., Export Office, B-21, Produce Exchange, New York, U. S. A.

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Im Firmenverzeichnis für Käufer das im ersten Theil dieses Blattes wiedergegeben ist, werden unsere geehrten Leser die betreffenden Waarenartikel in deutscher Sprache wiedergegeben finden. Es geschieht dies um Ihnen die Möglichkeit zu geben, mit unseren Inserenten leichter korrespondiren zu können.

Die Sitte den Hut in Gegenwart einer Dame abzunehmen datirt bereits seit den frühen Tagen des Ritterthums als Ritter nie anders als nur in voller Rüstung sich öffentlich sehen liessen. Wenn er, jedoch, die Stätte eines Freundes oder das Zimmer worin Damen anwesend waren betrat, erheischte es der gute Brauch, dass ein Ritter seinen Helm abnahm, und zwar als Zeichen, da er sich in Gegenwart von Freunden befand, er sich vor jeden Angriff sicher fühlen durfte.

Der Expressverkehr per Trolley

Die vielen Vortheile die durch örtliche und vorörtliche elektrische Bahnen für den Passagierbedarf erwachsen, sind jedem Amerikaner wohlbekannt. Es bezahlt sich besser einzelne Wagen zwischen Vororten verkehren zu lassen als Eisenbahnen. Die Fahrpreise auf Trolleybahnen sind billiger als auf den Eisenbahnen. Elektrische Wägen laufen auf alten Landstrecken im Zickzack herum über Hügel und Thal und machen an jedem Einzelpunkte Halt; doch Eisenbahnhaltestellen werden meistens durch die Topographie der event. Landstrecke beeinflusst und Züge halten nur an langentfernten Zwischenräumen.

Nicht lange nachdem Trolleylinien Stadt mit Stadt und Stadt mit Dorf zu verbinden anfingen, sah das Publikum wie auch die Bahnverwaltung den Vortheil ein, der beiden durch eine Verbindung des Passagierdienstverkehrs mit dem Fracht- und Expressdienst erwachsen dürfte. Viele elektrische Linien im Mittelwesten, in den Neuengland Staaten und in New York erfreuen sich eines zwar kleinen, doch nichtsdestoweniger blühenden und stets wachsenden Aufschwunges im Expresshandel. In vielen der grösseren Städte geben die Freibriefe den Gesellschaften das Recht auch Fracht zu befördern und an vielen Orten existirt kein Hindernis mehr dieses Vorrecht auch den elektrischen Linien einzuverleiben.

Der Amerikanische Landwirth

Ein weiteres Jahr unübrefflicher Prosperität ist den Landwirthen dieses Landes zu Theil geworden, ein neues merkwürdiges Jahr hat sich einer Serie gleichbedautender Jahre angereiht wie sie den Landwirthen keines Landes je zuvor in den Traum gekommen. Die Produktion steht unerreicht da; der Werth hat die höchsten ziffer erricht, die es je zu erlangen nur gewarzt; der Werth des Nationalüberschusses der Landwirthe steht noch immer auf derselben Höhe wie zur Zeit als es dem Handelsbalanz durch erfolgreiches Wachsen während vieler Jahre emporgeschwungen und unser Land von einer geldborgenden Nattion zu einem Geldverlieher gemacht hat; es herrscht noch immer eine Fortdauer ungeahnten Sparens, so enorm, dass örtliche Banken durch den ungenwöhnlichen Reichthum in Verlegenheit gerathen und die Landwirthe thatsächlich beunruhigt werden wie lohnende Anlagen machen zu können; und, als ob all diese Offenbarung des Wohlstandes höchsten Gedeihens noch nicht genug wäre, die Landgüter selbst haben sich an Werth obendrein noch fabelhaft vergrössert, erweitert.

Die Ernten der Landwirthschaft sind noch nie zuvor so reichhaltig und werthvoll wie eben jetzt eingeheimst worden. Das theilweise Versagen von zwei oder drei minderwerthigen Ernten macht auf die grossen Totalernten keinen beispielswerthen Eindruck. Die ergiebige Wirthschaftsproduktion von 1905 weist den allerhöchsten Betrag auf, den je die Landwirthschaft dieses oder irgend eines anderen Landes erreichte, es ist dies eine ungeheuere Anhäufung von Resultaten, von Hirn, Muskeln und Maschinen das sich auf einen Werth von 6.415.000.000 Dollar emporgeschwungen hat. Die Darlegung des produzirten Reichthums wie es im letzjührigen Bericht angeführt worden war, wurde dieses Jahr wegen derjenigen Produkte die zur Viehfütterung verwendet wurden nicht miteingeschlossen, da eine derartige Verdoppelung produzirten Reichthums in der Erzeugung an Bedarf von Farmthieren weit geringer ist als angenommen werden darf und dessen Betrag sich wahrscheinlich auf mehr beläuft als Produkte auf den Landwirthschaften erzeugt werden und deren Höhe praktisch somit kaum durch Censusangabe bestimmt werden kann.

Man hätte im Jahre 1904 annehmen dürfen, dass der von Landwirthen erzeugte Reichthum einen Werth erreicht hatte, wie es in vielen Jahren wohl kaum wieder erreicht werden kann, und doch ist jener Betrag um 256 Millionen Dollar dem Betrage dieses Jahres zurück, genau so wie der Betrag des Vorjahres den von 1903 um 242 Millionen Dollar überstieg.

Die Totalanhäufung von Reichthum in der Landwirthschaft in 1905 überragt der Produktion von 1904 um 4 Proz.; es ist grösser als die von 1903 um 8 Proz. überragt aber den Censusziffern von 1899 um 36 Proz.—und dies Alles nach der kurzen Spanne Zeit von nur sechs Jahren.

So kein Rückfall von der hohen Stellung die der Farmer heute einnimmt stattfindet, dürfte diesser Reichthumerzeuger innerhalb dreier Jahre auf das vorhergegangene Jahrzehnt mit Stolz zurückblicken, und wenn er dann diese Ziffern zu den Erzeugnissen seines Reichthums hinzufügt wird sich ergeben dass das Landwirthschaftliche, oder ca. 35% der Totalbevölkerung einen Reichthum innerhalb dieser zehn Jahre geschaffen hat, das gleichbedeutend mit der Hälfte des Nationalreichthums dasteht, welcher durch Arbeit erzeugt und mit den Ueberschüssen und Ersparnissen dreier Jahrhunderte gleichbedeutend ist.

Amerikanische Maschinen in den Vordergrund

Amerikanische landwirthschaftliche Maschinen zeichnen sich durch Leichtigkeit und Stärke aus. Wenn die in Deutschland, Frankreich und England gebauten Maschinen an Ansehen auch massiver sind, so können sie doch immerhin nicht schwerere Arbeit verrichten oder gar länger vorhalten als es die leichten und grazösen amerikanischen Maschinen thun. Und das geschieht eben weil unsere Fabrikanten ihren Maschinen nur an solchen Theilen Stärke verleihen, wo sie am meisten der Spannung ausgesetzt sind; doch wo Schwere durchaus nicht erforderlich ist, sparen sie an Material und Gewicht. Wenn stark gebaut, können leichte Maschinen ganz ohne

El Hacendado de Campo Americano

Otro Año de Prosperidad sin Igual para los Hacendados de Campo de este país se ha añadido á la muy notable serie de Años prósperos que les ha cabido á Ningunos Otros Hacendados de País alguno en los Anales de la Agricultura del Mundo. La Producción ha sido sin igual: su valor ha llegado á las mas altos guarismos jamas obtenido. El Valor del Sobrante Nacional de los Hacendados mantiene todavía la magnitud que ha creado un Balance Comercial, con las Sucesivas Adiciones por muchos Años, suficiente para convertir esta Nación de Deudora en Acreedora. Continúan los Ahorros sin precedente que han confundido á los Bancos ó Cajas de Ahorros por el volumen de sus riquezas, y Perturbado á los Hacendados por no poder hallar en qué invertir su dinero, y, como si todo esto no fuese Indicación de un alto grado de bienestar, el valor de las mismas fincas ha aumentado de un modo Fabuloso.

Jamás antes ha sido tan inmensa la producción agrícola, ni han alcanzado tan altos precios las cosechas. La perdida parcial de dos ó tres cosechas de segunda clase no ha hecho impresión aparente en el asombroso conjunto de todas las cosechas. La produccion que ha enriquecido á los hacendados en 1905 jamas ha llegado en este ó en ningún otro país, á tan estupenda suma, ascendiendo el valor del fruto de la inteligencia, los brazos y la maquinaria á más de $6,450,000,000.00 (seis mil cuatrocientos cincuenta millones de pesos oro americano).

La deducción de la riqueza producida, según el informe del año pasado, para alimentar el ganado y otros animales no se expresa este año, porque la duplicación de la riqueza producida en el consumo de productos por los animales de las fincas compensa con mucho el valor de los productos consumidos, y es imposible calcular ó averiguar dicho consumo y dicho producto.

Se pudo suponer razonablemente en 1904 que la riqueza producida por los hacendados había alcanzado un valor que no se podría igualar en algunos de los años siguientes: pero aquel valor fué excedido en 1905 con el aumento de $256,000,000.00, así como el valor de la producción de 1904 excedió en $242,000,000.00 el de la producción de 1903.

El gran total de la riqueza producida por las haciendas de campo en 1905 excede en un 4 por ciento la de 1904; es 8 por ciento mayor que la de 1903; y sobrepuja en un 36 por ciento los guarismos del censo de 1899, y esto después de un curso de tiempo de 6 años solamente.

Si no hay una decaida en la alta posición que hoy ocupa el hacendado de este país como productor de riqueza, y de aquí á tres años echa una mirada hacia atrás y suma las cantidades de las riquezas que ha producido durante estos diez años, hallará que el elemento agrícola, ó un 35 por ciento de la población de este país ha producido en dichos diez años una summa igual á una mitad de toda la riqueza nacional producida por el trabajo del hombre, y compuesta de los sobrantes y ahorros de tres siglos.

Máquina para los Criadores de Aves de Corral

La nueva Cortadora de Trebol es una nueva maquina ofrecida recientemente en el mercado por la Silver Mfg. Co., de Salem, Ohio, U. S. A.

Con el fin de satisfacer la demanda universal de una maquina de este género se ha diseñado esta especialmente para cortar ó picar la alfafa, el trebol, etc., para alimentar las aves de corral. Hace algún tiempo que se sentia la falta de una maquina semejante, pues ha sido demostrado por los criadores de aves de corral que la comida picada es una de las necesidades para criar dichas aves con buen éxito.

Con el objeto de asegurar el facil funcionamiento se ha provisto la máquina de una rueda volante pesada, y habiéndola sometido á pruebas practicas, se ha demostrado que corta ó pica con mayor rapidez que otras máquinas que cuestan casi el doble.

Otra importante ventaja en la construcción de esta picadora de trébol consiste en ser ajustable la plancha cortadora, permitiendole así al operador conservar siempre en la mejor condición posible el mecanismo cortador.

Otra razón por la cual funciona con facilidad esta maquina es que su cuello es más ancho que el de ninguna otra cortadora de esta clase, teniendo asi mayor espacio donde esparcir el trébol, y cortándolo, de consiguiente, con mucho mayor facilidad que las máquinas de cuello angosto.

Esta cortadora de trébol tiene cuatro cuchillos espirales de 8 pulgadas en un sólido centro y corta en pedacitos de un 1/8 de pulgada. Largo de la máquina, 24 pulgadas: largo de la caja, 18 pulgadas: mayor anchura de la caja, 10 pulgadas; ancho de la caja en el cuello, 8 pulgadas. Corta con facilidad un "bushel" de trébol en diez minutos. Se monta en un cajón ó banco de la altura debida para facilitarle su manejo al operador.

Los fabricantes hacen una especialidad de su comercio de exportación, y contestarán con claridad y prontitud todas las preguntas que se les haga. La firma solicita correspondencia, y los que se interesen deberian escribir á la Silver Mfg. Co., Salem, Ohio, U. S. A.

Bombas y Herramientas para Heno de Myers

Nuestros lectores se interesarán en la lectura de una breve descripción de una gran industria americana: la fábrica de bombas y herramientas para henear más grande del mundo, la casa de F. E. Myers & Bro., de Ashland, O., U. S. A. Los edificios de la fábrica de esa grande institucion ocupan una gran extensión de terreno. Algunos guarismos relativos á esta empresa interesarán.

Las fábricas cubren un total de 350,000 pies cuadrados de espacio de suelo: seis "acres" se requeririan para darles el area requerida por los talleres que hoy tienen. El valor de los negocios que hacen al año requeririan para expresarse siete guarismos. La cantidad de dinero que paga ánualmente á sus empleados y obreros asciende a $300,000.00, ó $25,000.00 cada mes del año: da ocupación á 500 hombres, y la lista de sus parroquianos llega á un total de 15,000 hombres de negocios ó casas en todo el mundo. La producción de esa planta en un año es maravillosa. El producto diario de esa gran fábrica y su fuerza de operarios incluye más de dos millas de vias de puerta, 700 colgantes de puerta, 300 descargadores de heno, 500 horquillas para heno 600 bombas, 1,200 poleas, escaleras de almacén, cepos de enrejado de pesebre, etc. Estos son guarismos asombrosos, y one instintivamente preguntará "¿Adónde va todo eso?"

La Compañia tiene en los Estados Unidos cinco casas sucursales para su distribución, una casa para la exportación en Nueva York, más de 350 casas para la venta á destajo, y más de 30 agentes viajeros que van á todas partes del país.

Tienen agencias en Francia, Italia, Inglaterra, Rusia, Noruega, Suecia, el Africa del Sur, Dinamarca, Austria, Sud América y Australia, para que sea universal la venta de sus productos. En toda la extensión de la tierra son conocidas las bombas de Myers. Dondequiera que ha llegado, aunque sea de paso, la civilización es reconocida la marca industrial de Myers como un emblema del mérito y la utilidad.

Aquellos de nuestros lectores que deseen familiarizarse con lo mejor que producen los Estados Unidos en el ramo fabril de bombas y herramientas para el heno no deberian perder tiempo en enviar por el catálogo de esa empresa, el cual se puede obtener gratis dirigiéndose á F. E. Myers & Bro., Export Office, B-21, Produce Exchange, New York, U. S. A.

EXPORT IMPLEMENT AGE

NUR FÜR'S AUSLAND BESTIMMT.

Ein unabhängiges Blatt, das ausschliesslich dem Exporthandel in landwirtschaftlichen Maschinen, Pumpen, Windmotoren und sämmtlichen Artikeln der Land- und Milchwirtschaft gewidmet ist.

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Im Firmenverzeichnis für Käufer das im ersten Theil dieses Blattes wiedergegeben ist, werden unsere geehrten Leser die betreffenden Waarenartikel in deutscher Sprache wiedergegeben finden. Es geschieht dies um ihnen die Möglichkeit zu geben, mit unseren Inserenten leichter korrespondiren zu können.

Die Sitte den Hut in Gegenwart einer Dame abzunehmen datirt bereits seit den frühen Tagen des Ritterthums als Ritter nie anders als nur in voller Rüstung sich öffentlich sehen liessen. Wenn er, jedoch, die Stätte eines Freundes oder das Zimmer worin Damen anwesend waren betrat, erheischte es der gute Brauch, dass ein Ritter seinen Helm abnahm, und zwar als Zeichen, da er sich in Gegenwart von Freunden befand, er sich vor jeden Angriff sicher fühlen durfte.

Der Expressverkehr per Trolley

Die vielen Vortheile die durch örtliche und vorörtliche elektrische Bahnen für den Passagierbedarf erwachsen, sind jedem Amerikaner wohlbekannt. Es bezahlt sich besser einzelne Wagen zwischen Vororten verkehren zu lassen als Eisenbahnen. Die Fahrpreise auf Trolleybahnen sind billiger als auf den Eisenbahnen. Elektrische Wägen laufen auf alten Landstrecken im Zickzack herum über Hügel und Thal und machen an jedem Einzelpunkte Halt; doch Eisenbahnhaltestellen werden meistens durch die Topographie der event. Landstrecke beeinflusst und Züge halten nur an langentfernten Zwischenräumen.

Nicht lange nachdem Trolleylinien Stadt mit Stadt und Stadt mit Dorf zu verbinden anfingen, sah das Publikum wie auch die Bahnverwaltung den Vortheil ein, der beiden durch eine Verbindung des Passagierdienstverkehrs mit dem Fracht- und Expressdienst erwachsen dürfte. Viele elektrische Linien im Mittelwesten, in den Neuengland Staaten und in New York erfreuen sich eines zwar kleinen, doch nichtsdestoweniger blühenden und stets wachsenden Aufschwunges im Expresshandel. In vielen der grösseren Städte geben die Freibriefe den Gesellschaften das Recht auch Fracht zu befördern und an vielen Orten existirt kein Hindernis mehr dieses Vorrecht auch den elektrischen Linien einzuverleiben.

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INTENTIONAL SECOND EXPOSURE

Schwierigkeit hantirt werden und brauchen nur geringer Zugkraft; auch wird durch diese Leichtigkeit viel an Fracht erspart.

Die amerikanischen landwirthschaftlichen Maschinen haben sich jetzt in grossem Masse den früher uber sie lautgewordenen Vorutheilen über ihr so leichtes Aussehen als gewachsen erwiesen und die schwierigsten Feldproben in jedem Lande der Welt erfolgreich bestanden.

Brasilien benöthight amerikanische Landwirthschaftsgeräthe

Generalkonsul Seeger, in Rio de Janeiro, Brasilien, überreichte dem Mannfakturen Bureau durch das betreffende Ministerium zwei an ihm gerichtete Briefe von brasilianischen Kaufleuten welche ihn ersuchen, ihnen Adressen von Fabrikanten landwirthschaftlicher Geräthe und Konstruktions-Eisen in den Vereinigten Staaten aufzugeben. Die betreffenden Briefe waren streng vertraulich und die Namen der Schreiber nicht genannt und zwar aus Gründen, welche jedem Geschäftsmanne verständlich sind. Der Brief der Firma welche mit Ackerbaugeräthen handelt, und ihre Einkäufe in England macht, ist hiermit wiedergegeben:

"Vor einigen Monaten bestellten wir durch ein hier etablirtes englisches Haus einige amerikanische Maschinen für landwirthschaftliche Zwecke und waren damit so zufrieden, dass wir neue Bestellungen übermachten. Leider fanden wir, dass die uns gesandten Maschinen englischer Fabrikation nur genaue Nachahmungen des amerikanischen Modelles und Systems sind und trotz alledem sogar von geringerer Qualität. Wir würden Ihnen deshalb sehr verbunden sein, wenn Sie uns gefälligst Adressen von amerikanischen Fabriken aufgeben wollten, welche Pflüge, Kultivatoren, Eggen und andere Geräthe konstruiren, da wir die Absicht haben künftig solche Artikel nur direkt zu importiren, um uns vor Nachahmungen zu schützen."

Der andere Brief, von einer Firma in Rio geschrieben, welche gegenwärtig Eisenlieferanten und Bauunternehmer in Frankreich und Belgien repräsentirt, lautet wie folgt:

"Da wir wissen, dass Sie grosses Interesse an der Förderung der kommerziellen und industriellen Beziehungen zwischen den Vereinigten Staaten von Amerika und Brasilien nehmen, erlauben wir uns Ihnen folgenden Vorschlag zu machen, welchen Sie gefalligst erwägen wollen:

"Wir vertreten in Brasilien mehrere Eisenlieferanten und Bauunternehmer Frankreich's und Belgiens und Sie wissen, wahrscheinlich, dass sämmtliche Eisenhändler in Europa ein Syndikat gebildet haben, um die Preise ihrer Produkte aufrecht erhalten zu können. Es wäre nun eine gute Gelegenheit für einen neuen Konkurrenten welcher durch keinerlei Verpflichtungen gebunden ist und sich in der Lage befindet den europäischen Industrien Konkurrenz zu machen und sich den hiesigen Markt zu sichern; besonders da mehrere bedeutende nordamerikanische Gesellschaften vor einigen Monaten in Brasilien gegründet wurden. Warum sollten nun Amerikaner hier nicht das thun, was in Europa mit so gutem Erfolge zu Stande gebracht wurde?

"Wir wären Ihnen sehr verbunden, wenn Sie uns mit einer guten Stahlgiesserei und einem bedeutenden Walzwerke, sowie auch mit Eisengiessern und Konstrukteuren in Verbindung setzen würden, welche im Stande wären uns Eisengerüste, Brücken, u. s. w. zu liefern. Wir sind fest überzeugt, dass viele nordamerikanische Eisen- und Stahlfabrikanten in der Lage sind ebenso billig wie ihre europäischen Konkurrenten zu liefern und auch denselben Kredit zu geben. Sie sind hier schon lange genug um für die rasche Ausdehnung des deutschen Handels in Brasilien Zeugnis abzulegen und über die Mittel und Wege Bescheid zu wissen, die von denjenigen Firmen angewendet werden, welche sich auf dem hiesigen Markte den alten Platz sichern wollen. Sie kennen auch die grossen Zugeständnisse welche die deutschen Fabrikanten ihren Kunden in Betreff der Zahlungen machen und wir sehen nicht ein, warum die nordamerikanischen Kaufleute nicht dasselbe thun sollten, was Andere thun können?"

Reflektanten welche mit den genannten Schreibern in Verbindung treten wollen, können deren Adressen von dem General Konsul, Eugene Seeger, in Rio de Janeiro, erhalten oder dieselben werden auf Verlangen von dem Manufakturen Bureau bereitwilligst zur Verfügung gestellt.

Normgeräthe amerikanischer Konstruktion

Wir erlauben uns die besondere Aufmerksamkeit unserer geschatzten Leser auf die Annonce der "Ohio Cultivator Co.," Bellevue, Ohio, U. S. A., zu lenken, die auf einer anderen Spalte dieses Blattes zu ersehen ist.

Mit Stolz begrüssen wir obige Firma in der Liste unserer regelmässigen Inserenten. Nach ihren vorhergegangenen Erfolgen zu schliessen, nach dem grossen Verlangen ihrer so beliebten Erzeugnisse zu urtheilen—ganz abgesehen von ihrem heutigen flotten Gerschäftserfolg den sie in so reichem Masse verdienen, der mit hehren Geschäftsprinzipien und strengster Ehrlichkeit identisch ist—dürfen wir ihnen zuversichtlich Grosses für die Zukunft versprechen. Mit Vergnügen heben wir die Perfektion ihrer Erzeugnisse hervor, wir kennen dieselben, aus eigener Erfahrung, und empfehlen sie der Geschäftswelt im Allgemeinen.

Wir sind in der angenehmen Lage die "Ohio Cultivator Co.," unseren geschätzten Lesern auf's Angelegentlichste empfehlen zu können. Wer ihre Erzeugnisse brauchen sollte, kann sich vergewissern koulant und ehrlich von ihnen bedient und behandelt zu werden. Es ist dies eine Eigenschaft dieser Gesellschaft wodurch sie ihren heutigen Ruf begründet hat.

Das Supremat der Monitor-Maschinne

Es gereicht uns stets zu Vergnügen, die Aufmerksamkeit unserer geschätzten Leser auf technische Erfindungen zu lenken, auf solche insbesonders, die den landwirthschaftlichen Interessen der Welt in irgend welcher Weise von Nutzen sein könnten. Zu den wichtigsten Vorkehrungen der Neuzeit auf dem Gebiete von Säeapparaten die zu unserer Kenntnis gelangt sind, gehört einer welcher sich nicht allein als ungewöhnlicher Zeitersparer für den Landmann erweist, sondern auch sehr nützlich ist—ein Apparat der zwei Körner erwachsen lässt, wo früher nur ein einziges wuchs. Wir sprechen hier von der "Monitor" Getreiderille mit Doppelscheiben Vorrichtung. Sie schneidet und pulverisirt leicht selbst den allerhärtesten Boden und darf zu den wenigen Rillen gezählt werden die in befriedigendster Weise Bodensorten jeder Beschaffenheit bearbeiten können. Es wird für diese Maschine beansprucht, dass sie den Ertrag von vier bis sieben Scheffel den Morgen vergrössert·im Vergleich mit anderen Maschinen. Diese Monitor Scheibe ist durch zwölf Patente geschützt und steht als das endliche Resultat eines 35- jährigen Studiums praktischer Erfahrung auf dem Gebeite der Rillenfabrikation da. Es wird von der "Monitor Drill Co.," Minneapolis, Minn., U. S. A., gebaut. Die Gesellschaft ist stets erbötig ausführliche Beschreibung mit Bezugnahme auf die ausserordentlichen verdienste und Tüchtigkeit dieser Erfindung auf Verlangen zu senden.

Verbesserungen in landwirthschaftlichen Maschinen

Einer der grossartigsten Vorzüge in der Entwickelung moderner amerikanischer Landwirthschaft ist in der grossen Anzahl der Verbesserungen zu finden die sowohl in den Methoden als auch in den Maschinen stattgefunden haben. Maschinenarbeit ersetzt jetzt jede andere. Die Arbeit menschlicher Kraft die früher erforderlich war eine Ernte hervorzurufen oder bestimmte event. Flächen zu bearbeiten ist heute bedeutend reduziert; auch hat die moderne Maschine gar enorm dazu beigetragen lokale Märkte von Cerealien, Baumwolle, Thier- und Meiereiprodukten in Weltmärkte umzuschaffen.

Die ersten Ankömmlinge in diesem Lande siedelten sich in Jamestown, Va., an. Sie besassen nur sehr wenige Geräthe auf dem Gebiete der Landwirthschaft. Ihre ganze Ausstattung bestand thatsächlich aus Axt und Haue, vielleicht auch noch eine Hacke, und mit dieser Ausstaffirung bearbeiteten sie nicht allein den Boden, sondern zogen auch ihre ersten Ernten.

Mit dem eingehenden Studium landwirthschaftlicher Maschinen, gilt der Pflug unzweifelhaft als die wichtigste von Allen. Mehr als jede andere Maschine wurde der Pflug studirt und vielfacher Experimente unterworfen. In 1637 gab es blos 37 Pflüge in der Mass. Bay Kolonie und zwölf Jahre nach dem Landen der Pilgrim-Väter existirten auf den Landgütern überhaupt keine Pflüge; der Boden wurde mit gewöhnlichen Hauen und Hacken aufgelöst. Als Pflüge aber endlich in den Gebrauch gekommen waren, hatte der Pflugbesitzer das Pflügen für das ganze Gemeinwesen zu besorgen wofür die "Städter", wie sie sie nannten, die Pflüge in gehöriger Reparatur erhalten mussten; der Pflugbesitzer aber erhielt gewisse Prämien dafür ausbezahlt. Es war eben Gang und Gebe jener Zeit.

Jene alten Pflüge müssen der Beschreibung nach gar grotesk ausgesehen haben und von ihrer Leistungsfähigkeit zu schliessen waren sie es auch. Der als "old colony plow" bekannte Pflug war zehn Fuss lang und besass einen vier Fuss langen Schieber; die von ihm zurückgelassenen Furchen sahen aus wie das Gerippe eines abgemagerten Pferdes. Es bedurfte acht oder zehn Ochsen ihn zu ziehen, ein Mann musste auf dem Pflugbalken fahren, ein anderer ihm mit einer Haue folgen und die von ihm freigelassenen Stellen aufgraben.

Das erste herausgenommene Patent war für einen gusseisernen Pflug. In demselben war das Streichbrett, die Pflugschar und der Schieber aus einem Stück verfertigt; derselbe war durchaus nicht beliebt und schien von den Landwirthen nicht gebraucht zu werden, weil, wie sie sagten, er den Boden vergiftete und Unkraut hervorbrachte.

Thomas Jefferson schrieb im Jahre 1798 eine Abhandlung über den Pflug worin er das Resultat seines sorgfältigen Studiums über die Krümmung des Streichbrettes ausführte; er legte klar wie event. Reibung zu vermeiden sei und dennoch möglich gute Furchen zu schaffen; es soll nichtsdestoweniger 45 jähriger erfinderischer Genialität und Erfindungsgabe seitens der Farmer bedurft haben, um zu einem endgültigen Entschluss betreffs der besten Pflugform zu gelangen.

Der von Oliver in 1870 angefertigte Hartgusspflug galt als der erste passable Pflug welcher bis zu jener Periode fabrizirt wurde; später wurde er durch den Fahrsitzpflug, durch den Pflug mit mehreren Pflugscharen, den verbundenen Eggenpflug, den Wendepflug, den Weingartenpflug, den Rübenpflug, den Scheibenpflug und schliesslich durch den Kombinations Dampfpflug mit Säe- und Eggenvorrichtung ersetzt.

Als Resultat von Pflugverbesserungen—wir beziehen uns hier nur auf die neueren Typen—wurden die Herstellungskosten des Weizens von vier Cent den Scheffel auf nur einen Cent reduzirt. Menschenarbeit die zur Fertigstellung des Bodens früher erforderlich war um einen Scheffel Weizen zu produziren wurde von 32.8 Minuten auf 2.2 Minuten und Thierarbeit von 57 Minuten auf nur anderthalb Minuten verringert.

Eine andere Geräthegattung deren Vervollkommnung lange Jahre schwieriger Experimente bedurfte ist der Binder, die Erntemaschine miteingeschlossen. Nicht langer braucht unser Landmann sein Getreide mit der Sichel oder der Sense zu schneiden, es dann mit der Hand aufzubinden, und, schliesslich mit dem Flegel auszudreschen; er kann heute die ganze Prozedur des Schneidens, Dreschens und Einsackens auf einmal verrichten. Auch braucht er sein Gras nicht mehr mit der Sense zu schneiden, es mit der Hand zusammenzutechen, es dann in ebensolcher Weise aufund abzuladen—er hat jetzt Maschinen zum Schneiden, Rechen, zum Auf- und Abladen ohne der gewaltigen Handarbeit zu benöthigen wie es früher so oft der Fall war.

Die alte Methode der Handgetreideernte war für die Landwirthe der Vereinigten Staaten zu langsam, infolge dessen patentirte Hussey, aus Cincinnati, Ohio, in 1833 seine erste erfolgreiche Erntemaschine. Dieselbe wurde in New York und Illinois in 1834 eingeführt, in Missouri, in 1835 und in Pennsylvanien, in 1837.

Dieser Maschine folgte McCormick's Erntemaschine in 1834; die beiden wurden aber nicht bis erst in 1845 beliebt als 150 derselben in Cincinnati gebaut wurden, welchen 300 weitere im darauffolgenden Jahre folgten.

In 1852 wurden alle Erntemachinen in Genua geprüft und einer weiteren Prüfung in 1855 auf der französischen Ausstellung unterworfen. Der letzteren Prüfung schossen sich ej eine englische, eine französiche und eine amerikanische Maschine an und das Resultat war, dass das Urtheil bedeutend zu Gunsten der amerikanischen Maschine ausfiel.

Alle seinerzeit erbauten Maschinen liessen das Getreide ungebunden auf dem Boden zurück; in 1856 suchte Yost um ein Patent auf eine Schnurbindemaschine nach, welche mittelst eines Warten betrieben werden sollte. Dieser letzten Maschine folgte eine Anzahl anderer Maschinen die das Getreide mit Zwirn, andere mit Drat und manche sogar mit Gras banden. Der Erfolg des Selbstbinders hing meistentheils vom Knoten ab und nur zwei Maschinensorten waren darin erfolgreich—die eine von Walter A. Wood konstruirt und die zweite von Appleby, noch heute als die "Appleby Bindemaschine" bekannt.

Der Selbstbindemaschine folgte die Aehrenschneide Maschine, eine Maschine deren Aufgabe es ist nur Getreideköpfe zu schneiden, dreschen und einzusacken; sie kann sowohl mit Pferden als auch mit der Traktionsmaschine gezogen werden und wird zum Unterschiede anderer Maschinen gestossen und nicht gezogen. Für den Pferdegebrauch erfordert sie 30 bis 36, um 60 bis 125 Morgen zu schneiden und kann zwischen 1700 bis 3000 Scheffel täglich bearbeiten.

Gleichsam mit der Erntemaschine hat sich die Mähmaschine entwickelt; einige Jahre lang waren bei de thatsächlich ein un dieselbe Maschine; Hussey ist der wirkliche Begründer der Mähmaschine.

Der erste praktische Mäher wurde von William Ketcham konstruirt und später, in 1856, von einem gewissen Louis Miller, welcher sie alle Prinzipien guter moderner Maschinen und ganz umbaute, ergänzt. Jene Maschine enthält ist nach allmähliger Entwickelung die vollkommene Maschine von heute, die Type des zwanzigsten Jahrhunderts. Eine andere Maschine welche eine sehr wichtige Rolle spielt, ist die Getreide-Erntemaschine. Dieselbe braucht wohl hier kaum weiter beschrieben zu werden, denn alle stattgehabten Verbesserungen gehören der Neuzeit an und sind fast Jedem bekannt.

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Mit dem Dreschen geht es heute ebenfalls leichter und besser vorwärts, und zwar unter geringerer Zeit- und Arbeitsanwendung als früher. Die erste Dreschmaschine wurde in 1855 von Pitt patentirt. Dieser folgte später eine Maschine die mit einem Strohschober verbunden war und noch später eine mit einem Selbstspeiser und Bandschneider; diese letztere drischt, wiegt und sackt das Getreide ein, dann stapelt es das Stroh durch den Wind auf.

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Hinsichtlich des Ranges den dieses Land in der Fabrikation landwirthschaftlicher Geräthe und Maschinen einnimmt, darf behauptet werden, dass es sich in Qualität sowohl als auch an Zahl vortrefflich auszeichnet. Mechanische Einrichtungen haben in vieler Hinsicht überall in diesem Lande menschliche Arbeit verdrängt oder Arbeitsvorrichtungen verbessert und die landwirthschaftlichen Produkte dadurch vermehrt, die Herstellungskosten verringert und in der Weise des Landwirthen Einnahmen vergrössert, sein Leben leichter gestaltet als es je zuvor gewesen ist.—George A. Crabb, in "The Agricultural Student."

Myers Pumpen und Heuvorrichtungen

Eine kurzgefasste Beschreibung der grossen amerikanischen Industrie,- der grössten Pumpen- und Heuwerkzeugfabrik der Welt—des Hauses F. E. Myers & Bro., Ashland, O., U. S. A., dürfte hier unzweifelhaft für unsere geschätzten Leser von Interesse sein. Die Fabrikräumlichkeiten ihrer grossen Werkstatt nehmen ungeheuere Dimensionen in Anspruch. Ein paar dahinbezügliche Ziffer könnten an dieser Stelle interessant erscheinen.

Die Totalfabrikräumlichkeiten nehmen 350.000 Quadratfuss Stockwerkraum ein, oder, rechnen wir es in Flächenraum aus, so dürften sechs Morgen Landes erforderlich sein alle Fabrikgebäude hinzubauen die die Gesellschaft dort besitzt. Ihr jährlicher Geschäftsumsatz beläuft sich auf eine siebenreihige Ziffer und ihre Zahlrolle auf 300.000 Dollar jährlich oder 25.000 Dollar monatlich; 500 Angestellte erhalten dort Beschäftigung und die Käuferliste schliesst ein Ganzes von 15.000 Geschäftshäusern und Kunden ein, die in allen Theilen der Welt wohnen. Die tägliche Produktion dieses grossen Etablissements ist in der That erstaunenswerth. Es schliesst über zwei Meilen Thürgeleise und über 700 Thürhängeeisen, 300 Heuentlader, 500 Heugabeln und 600 Pumpen, 1200 Kraftzugrollen, Lädenleiter, Heurechen, Klammern, u. s. w. mit ein. Es sind dies enorme Ziffern und man dürfte instinktiv geneigt sein zu fragen: "Wohin wird denn alles das verschickt?"

Die Firma hat in den Vereinigten Staaten fünf Grossfilialen, ein Exporthaus in New York, mehr als 350 Grosshandelshäuser und über 30 Reisende, welche alle Theile des Landes besuchen.

In Frankreich, Italien, England, Russland, Norwegen, Schweden, Süd-Afrika, Dänemark, Oesterreich, Süd-Amerika und Australien haben sie Agenturen so dass der Verkauf ihrer Waaren ein weltausgedehnter ist. Weit und breit in der ganzen Welt, woimmer Pumpen gebraucht werden, ist der Namen "Myers" bekannt. Woimmer die Civilisation vorbeigehend auch nur festen Fuss gefasst hat, ist die Myersche Handelsmarke ein wohlanerkanntes Emblem von Verdienst und Nützlichkeit geworden.

Diejenigen unserer geschätzten Leser die sich mit den allerbesten amerikanischen Erzeugnissen auf dem Gebiete von Pumpen und Heuvorrichtungen bekannt zu machen wünschen, sollten keine Zeit verlieren und den Katalog dieser Firma bestellen der franko Jedem versandt wird, der wie folgt an die Firma adressirt: F. E. Myers & Bro., Export Office, B-21, Produce Exchange, New York, U. S. A.

Das Metrische System

Ein genaues Studium über das Maass—und Gewichtsystem, schreibt der *Canadian Manufacturer,* erklärt die Thatsache, dass in keinem Lande, wo Meter und Metersystem dem Volke aufgebürdet wurden, dieses Maas sich einzig durch Verdienst hervorgethan habe. Das einzige was es gethan hat, ist, aus der schon dadurch entstanden Konfusion eine noch grössere zu machen.

EDISON, AMERICA'S GREAT INVENTOR, PREDICTS TREMENDOUS CHANGES

One of the world's greatest inventors, Mr. Thomas A. Edison, was recently visited by Mr. James Creelman, a well-known journalist, and the result of the interview is most interesting. Mr. Edison is no mere dreamer; he does things; he accomplishes practical results, and when he ventures into the realm of speculation his utterances are likely to prove prophetic. Mr. Creelman secured from Mr. Edison a very interesting statement of his views of the future of electricity, and he writes entertainingly of his interview, as follows:

"The look in Thomas A. Edison's gray eyes was almost as stirring as his declaration of confidence that before his death he would see the world's electricity produced by a direct process—without the intervention of steam and, with that discovery, the solution of the problem of aerial navigation and ocean vessels crossing the Atlantic in three days' time.

"We are groping on the verge of another great epoch in the world's history," he said. "It would not surprise me any morning to wake up and learn that some one or some group, of the 300,000 scientific men who are investigating all over the earth has seized the secret of electricity by direct process and begun another practical revolution of human affairs.

"It can be done. It will be done. I expect to see it before I die."

Again we were sitting in the little bare compartment at the end of Mr. Edison's chemical laboratory at Llewellyn Park, one of a huddle of brick buildings, the wonder theater of the alternate damnations and salvations of one of the very foremost men in the history of human invention.

"The first great change in the production of electricity will abolish the carrying of coal for that purpose," he said. "Instead of digging gross material out of the earth, loading it on cars and carrying it say 500 miles, there to put it under a boiler, burn it and so get power, we shall set up plants at the mouths of the mines, generate the power there and transmit it wherever it is needed by copper wires.

"It is preposterous to keep on putting the coal mines on wheels. It is too clumsy. It is too costly. There is no necessity for it.

"It is easier to carry molecular vibration—millions of waves a second—than freight cars full of crude matter. We can ship a 100,000 horse-power over a wire quicker and more economically than we can send the equivalent in coal over a railroad track.

"An Englishman told me a little while ago that he intended to set up a power station on the Thames, bring down coal by barges and sell electric power to London. I said to him 'How foolish! Why not run a copper wire between London and the coal mines and develop your power where the coal is? If you build that power station it will be obsolete inside of fifteen years.'

"We must eliminate the railroad altogether from this problem. What's the use of it? We don't want the coal anyhow. It does us no good to look at it. What we want is the resultant, the utmost energy that can be produced. And there is no sense in carrying around millions of tons of raw material like coal when we can get its product delivered to us by wire.

"Everything points to the fact that in the near future electricity will be produced for general consumption in great power houses at the mouths of the coal pits. That is the logical and common sense outcome of present events.

"The present method of doing things is merely a matter of habit. It's simply wonderful to observe how habit controls man and how it sometimes delays great reformations even in practical affairs. This system of carrying coal from the mines for the purpose of producing electricity somewhere else is habit. Habit is the greatest foe to progress and invention.

"The great majority of men are controlled by habit. They have always seen a thing done one way and that way seems to them the only way. But there are some of us who have a little of the spirit of evolution, and we bother and trouble the others by not letting them alone.

"Now the truth is that it will cost a third less to transport electrical power by wire than to carry it in the form of coal in railroad cars. Assume the price of coal to be $1 at the mouth of the mine, and assume the freight to be $1.90. Now we can turn that coal into electricity at the mine and convey it by wire at less than half the cost of the freightage of coal.

So, in years to come, the great electric power plants will be set up in the coal fields. Electric power will largely do away with steam power. Electric light will become cheaper than gas light.

MR. THOMAS A. EDISON,
The Great American Inventor.

"I believe firmly that all great trunk railroad lines will go to electricity inside of fifteen years. I don't mean simply passenger traffic but heavy freight traffic also. Within twenty years steam will be as out of fashion for railways as horses are for street cars to day."

Mr. Edison threw back his broad shoulders and clasped his hands behind his head, tilting back his chair and crossing his legs. He looked at the ceiling intently, and then a curious smile came over his splendid countenance.

"It's curious to see how long it takes men to get in motion when anything new turns up," he said. "And it doesn't seem to make much difference how important the thing is, or how obvious it is. There is the new electric locomotive which has been built for the New York Central Railroad. It could have been produced twenty years ago. We look upon it as a wonder, and it is a wonder; but a still greater wonder is that it has taken twenty years to get it built.

"We had a hard time to get the world to change from horse-power to electric power in street transportation. The street railway people said it would cost too much. They didn't see any reason why they should make a change when they were doing so well."

The gray eyes twinkled and the sensitive lips parted in a smile, which broadened into a gentle laugh. By this time the small boy was leaning on Mr. Edison's knee and looking up into his face, plainly enchanted.

"More than a quarter of a century ago I built about three miles of an electric railway at my place at Menlo Park. It was a good electric railway and worked well. I supposed, of course, that it would appeal to men. Well, Henry Villard came over to visit me and I showed him the railway. I explained its advantages over the horse car system. It was better from every point of view.

"I offered to sell that electric railway and all my patents and rights of every kind for exactly the amount of money it had cost me to produce it—just $12,000.

Mr. Villard got a lot of capitalists together, some of the brainiest and most experienced men in Wall street, and I explained the thing to them and they talked it all over very carefully and very solemnly, and then, what do you think? they refused to touch it any shape or form, on the ground that there was nothing in the idea of an electric railway, absolutely no future for it."

The brows were raised, the nostrils expanded and the wide shoulders trembled with suppressed mirth. The gray eyes blinked merrily.

"Well, that staggered me for a while. I seemed to have lost every cent I had spent in the experiment. I could not make any impression on those men.

"Yet, look around you to-day. Look all over the country. Look all over the world and find me a country in which there are not electric railways. Electric railways have been among the great developers of modern civilization. They have transformed the centers of human population. Hundreds of millions of dollars have been invested in them and hundreds of thousands of men are engaged in operating them. And only twenty five years ago a body of picked, bright American capitalists could see nothing in the idea, although it had been developed to a practical, physical demonstration right here in New Jersey.

"Electricity will take the place of horses. It will solve the vehicle traffic problem in cities. My new electric storage battery itself will make electricity cheaper than horses. You see the new factory going up out there? Well in the spring we will be ready to furnish the new batteries. Not only will they mean half the space of horse traffic, but they will go twice as fast. They can be stored on upper floors by means of elevators. The saving of stable space in New York City will cover at least $200,000,000 of property.

"Another thing in the future: Wireless telegraphy will enable us to reach any ship in any sea. That is a certainty.

Not only will electric power be developed at and distributed from the coal mines in the future, but all the water power in the world will be used for the production of electricity. That movement has begun and is advancing rapidly. In California, where men have nerve enough to overcome habit, they are transmit-

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Mit dem Dreschen geht es heute ebenfalls leichter und besser vorwärts, und zwar unter geringerer Zeit- und Arbeitsanwendung als früher. Die erste Dreschmaschine wurde in 1855 von Pitt patentirt. Dieser folgte später eine Maschine die mit einem Strohschober verbunden war und noch später eine mit einem Selbstspeiser und Bandschneider; diese letztere drischt, wiegt und sackt das Getreide ein, dann stapelt es das Stroh durch den Wind auf.

Das Assortiment landwirthschaftlicher Geräthe ist viel zu gross es detailirt hier anzuführen; es wurde lediglich versucht die allerwichtigsten Sorten zu benennen. Eine Aufstellung der noch übrig bleibenden Hauptklassen dürfte interessant erscheinen. Alle kleineren Geräthe wurden früher zu Hause angefertigt und meistens aus Holz hergestellt; heute werden sie in der Fabrik gebaut. Andere sehr gebräuchliche Geräthe sind die Kartoffel Pflanz- und Ausgrabemaschine, der Tabackpflanzer, der Heurechen, der Heuschober, die Auflader und die Gabeln zum Abladen und zum Mähen, die Maisenthülser, die Futter- und Ensilage Schneidemaschine, der Düngerausbreiter und die vielen verschiedenen Sorten Wagen und Fahrzeuge im Gebrauch der Landwirthschaft. Weder Zeit noch Raum erlauben es die verschiedenen anderen Sorten die heute im Gebrauch der Feldarbeit sind hier anzuführen.

Hinsichtlich des Ranges den dieses Land in der Fabrikation landwirthschaftlicher Geräthe und Maschinen einnimmt, darf behauptet werden, dass es sich in Qualität sowohl als auch an Zahl vortrefflich auszeichnet. Mechanische Einrichtungen haben in vieler Hinsicht überall in diesem Lande menschliche Arbeit verdrängt oder Arbeitsvorrichtungen verbessert und die landwirthschaftlichen Produkte dadurch vermehrt, die Herstellungskosten verringert und in der Weise des Landwirthen Einnahmen vergrössert, sein Leben leichter gestaltet als es je zuvor gewesen ist.—George A. Crabb, in "The Agricultural Student."

Myers Pumpen und Heuvorrichtungen

Eine kurzgefasste Beschreibung der grossen amerikanischen Industrie,- der grössten Pumpen- und Heuwerkzeugfabrik der Welt—des Hauses F. E. Myers & Bro., Ashland, O., U. S. A., dürfte hier unzweifelhaft für unsere geschätzten Leser von Interesse sein. Die Fabrikräumlichkeiten ihrer grossen Werkstatt nehmen ungeheuere Dimensionen in Anspruch. Ein paar dahinbezügliche Ziffer könnten an dieser Stelle interessant erscheinen.

Die Totalfabrikräumlichkeiten nehmen 350.000 Quadratfuss Stockwerkraum ein, oder, rechnen wir es in Flächenraum aus, so dürften sechs Morgen Landes erforderlich sein alle Fabrikgebäude hinzubauen die die Gesellschaft dort besitzt. Ihr jährlicher Geschäftsumsatz beläuft sich auf eine siebenreihige Ziffer und ihre Zahlrolle auf 300.000 Dollar jährlich oder 25.000 Dollar monatlich; 500 Angestellte erhalten dort Beschäftigung und die Käuferliste schliesst ein Ganzes von 15.000 Geschäftshäusern und Kunden ein, die in allen Theilen der Welt wohnen. Die tägliche Produktion dieses grossen Etablissements ist in der That erstaunenswerth. Es schliesst über zwei Meilen Thürgeleise und über 700 Thürhängeeisen, 300 Heuentlader, 500 Heugabeln und 600 Pumpen, 1200 Kraftzugrollen, Lädenleiter, Heurechen, Klammern, u. s. w. mit ein. Es sind dies enorme Ziffern und man dürfte instinktiv geneigt sein zu fragen: "Wohin wird denn alles das verschickt?"

Die Firma hat in den Vereinigten Staaten fünf Grossfilialen, ein Exporthaus in New York, mehr als 350 Grosshandelshäuser und über 30 Reisende, welche alle Theile des Landes besuchen.

In Frankreich, Italien, England, Russland, Norwegen, Schweden, Süd-Afrika, Dänemark, Oesterreich, Süd-Amerika und Australien haben sie Agenturen so dass der Verkauf ihrer Waaren ein weltausgedehnter ist. Weit und breit in der ganzen Welt, woimmer Pumpen gebraucht werden, ist der Namen "Myers" bekannt, Woimmer die Civilisation vorbeigehend auch nur festen Fuss gefasst hat, ist die Myersche Handelsmarke ein wohlanerkanntes Emblem von Verdienst und Nützlichkeit geworden.

Diejenigen unserer geschätzten Leser die sich mit den allerbesten amerikanischen Erzeugnissen auf dem Gebiete von Pumpen und Heuvorrichtungen bekannt zu machen wünschen, sollten keine Zeit verlieren und den Katalog dieser Firma bestellen der franko Jedem versandt wird, der wie folgt an die Firma adressirt: F. E. Myers & Bro., Export Office, B-21, Produce Exchange, New York, U. S. A.

Das Metrische System

Ein genaues Studium über das Maass—und Gewichtsystem, schreibt der *Canadian Manufacturer*, erklärt die Thatsache, dass in keinem Lande, wo Meter und Metersystem dem Volke aufgebürdet wurden, dieses Maas sich einzig durch Verdienst hervorgethan habe. Das einzige was es gethan hat, ist, aus der schon dadurch entstanden Konfusion eine noch grössere zu machen.

EDISON, AMERICA'S GREAT INVENTOR, PREDICTS TREMENDOUS CHANGES

One of the world's greatest inventors, Mr. Thomas A. Edison, was recently visited by Mr. James Creelman, a well-known journalist, and the result of the interview is most interesting. Mr. Edison is no mere dreamer; he does things; he accomplishes practical results, and when he ventures into the realm of speculation his utterances are likely to prove prophetic. Mr. Creelman secured from Mr. Edison a very interesting statement of his views of the future of electricity, and he writes entertainingly of his interview, as follows:

"The look in Thomas A. Edison's gray eyes was almost as stirring as his declaration of confidence that before his death he would see the world's electricity produced by a direct process—without the intervention of steam—and, with that discovery, the solution of the problem of aerial navigation and ocean vessels crossing the Atlantic in three days' time.

"We are groping on the verge of another great epoch in the world's history," he said. "It would not surprise me any morning to wake up and learn that some one or some group, of the 300,000 scientific men who are investigating all over the earth has seized the secret of electricity by direct process and begun another practical revolution of human affairs

"It can be done. It will be done. I expect to see it before I die."

Again we were sitting in the little bare compartment at the end of Mr. Edison's chemical laboratory at Llewellyn Park, one of a huddle of brick buildings, the wonder theater of the alternate damnations and salvations of one of the very foremost men in the history of human invention.

"The first great change in the production of electricity will abolish the carrying of coal for that purpose," he said. "Instead of digging gross material out of the earth, loading it on cars and carrying it say 500 miles, there to put it under a boiler, burn it and so get power, we shall set up plants at the mouths of the mines, generate the power there and transmit it wherever it is needed by copper wires.

"It is preposterous to keep on putting the coal mines on wheels. It is too clumsy. It is too costly. There is no necessity for it.

"It is easier to carry molecular vibration—millions of waves a second—than freight cars full of crude matter. We can ship a 100,000 horse-power over a wire quicker and more economically than we can send the equivalent in coal over a railroad track.

"An Englishman told me a little while ago that he intended to set up a power station on the Thames, bring down coal by barges and sell electric power to London. I said to him. 'How foolish! Why not run a copper wire between London and the coal mines and develop your power where the coal is? If you build that power station it will be obsolete inside of fifteen years.'

"We must eliminate the railroad altogether from this problem. What's the use of it? We don't want the coal anyhow. It does us no good to look at it. What we want is the resultant, the utmost energy that can be produced. And there is no sense in carrying around millions of tons of raw material like coal when we can get its product delivered to us by wire.

"Everything points to the fact that in the near future electricity will be produced for general consumption in great power houses at the mouths of the coal pits. That is the logical and common-sense outcome of present events.

"The present method of doing things is merely a matter of habit. It's simply wonderful to observe how habit controls man and how it sometimes delays great reformations even in practical affairs. This system of carrying coal from the mines for the purpose of producing electricity somewhere else is habit. Habit is the greatest foe to progress and invention.

"The great majority of men are controlled by habit. They have always seen a thing done one way and that way seems to them the only way. But there are some of us who have a little of the spirit of evolution, and we bother and trouble the others by not letting them alone.

"Now the truth is that it will cost a third less to transport electrical power by wire than to carry it in the form of coal in railroad cars. Assume the price of coal to be $1 at the mouth of the mine, and assume the freight to be $1.90. Now we can turn that coal into electricity at the mine and convey it by wire at less than half the cost of the freightage of coal.

So, in years to come, the great electric power plants will be set up in the coal fields. Electric power will largely do away with steam power. Electric light will become cheaper than gas light.

MR. THOMAS A. EDISON,
The Great American Inventor.

"I believe firmly that all great trunk railroad lines will go to electricity inside of fifteen years. I don't mean simply passenger traffic. but heavy freight traffic also. Within twenty years steam will be as out of fashion for railways as horses are for street cars to-day."

Mr. Edison threw back his broad shoulders and clasped his hands behind his head, tilting back his chair and crossing his legs. He looked at the ceiling intently, and then a curious smile came over his splendid countenance

"It's curious to see how long it takes men to get in motion when anything new turns up," he said. "And it doesn't seem to make much difference how important the thing is, or how obvious it is. There is the new electric locomotive which has been built for the New York Central Railroad. It could have been produced twenty years ago. We look upon it as a wonder, and it is a wonder; but a still greater wonder is that it has taken twenty years to get it built.

"We had a hard time to get the world to change from horse-power to electric power in street transportation. The street railway people said it would cost too much. They didn't see any reason why they should make a change when they were doing so well."

The gray eyes twinkled and the sensitive lips parted in a smile, which broadened into a gentle laugh. By this time the small boy was leaning on Mr. Edison's knee and looking up into his face, plainly enchanted.

"More than a quarter of a century ago I built about three miles of an electric railway at my place at Menlo Park. It was a good electric railway and worked well. I supposed, of course, that it would appeal to men. Well, Henry Villard came over to visit me and I showed him the railway. I explained its advantages over the horse car system. It was better from every point of view.

"I offered to sell that electric railway and all my patents and rights of every kind for exactly the amount of money it had cost me to produce it—just $42,000.

Mr. Villard got a lot of capitalists together, some of the brainiest and most experienced men in Wall street, and I explained the thing to them and they talked it all over very carefully and very solemnly, and then, what do you think?—they refused to touch it any shape or form, on the ground that there was nothing in the idea of an electric railway, absolutely no future for it."

The brows were raised, the nostrils expanded and the wide shoulders trembled with suppressed mirth. The gray eyes blinked merrily.

"Well, that staggered me for a while. I seemed to have lost every cent I had spent in the experiment. I could not make any impression on those men.

"Yet, look around you to-day. Look all over the country. Look all over the world and find me a country in which there are not electric railways. Electric railways have been among the great developers of modern civilization. They have transformed the centers of human population. Hundreds of millions of dollars have been invested in them and hundreds of thousands of men are engaged in operating them. And only twenty-five years ago a body of picked, bright American capitalists could see nothing in the idea, although it had been developed to a practical, physical demonstration right here in New Jersey.

"Electricity will take the place of horses. It will solve the vehicle traffic problem in cities. My new electric storage battery itself will make electricity cheaper than horses. You see the new factory going up out there? Well in the spring we will be ready to furnish the new batteries. Not only will they mean half the space of horse traffic, but they will go twice as fast. They can be stored on upper floors by means of elevators. The saving of stable space in New York City will cover at least $200,000,000 of property.

"Another thing in the future: Wireless telegraphy will enable us to reach any ship in any sea. That is a certainty.

Not only will electric power be developed at and distributed from the coal mines in the future, but all the water power in the world will be used for the production of electricity. That movement has begun and is advancing rapidly. In California, where men have nerve enough to overcome habit, they are transmit-

INTENTIONAL SECOND EXPOSURE

ting electric power 275 miles by wire and running street cars and lighting the cities by it. That is the sort of spirit that will wake the world up one of these days. I wish that the spirit of California would spread everywhere.

"Go down South and you will find water power being turned into electricity for mills in all directions.

There are millions of horse-power to be picked up in the waters of the United States for practically a song. It is one of the world's greatest opportunities, this chance to convert water power into electricity and distribute it to the points where it is needed.

"When you come to think that one horse-power is equal to 25 men, and that water power changed into electrical energy is practically perpetual—the investment being simply for the original plant—you get some idea of the importance of the changes that the world is bound to see, changes that have already begun and are well under way."

Mr. Edison stood up and looked through the mists of his laboratory at the little tongues of flame flickering in the wilderness of fantastic glass jars and tubes.

"But even this is only the first step," he said.

"What do you see in the ultimate future Mr. Edison?"

He shook his white head and sat down again.

"That's a big question, a mighty big question."

"Is radium to bring a solution of the world's physical problems?"

"No, I don't look for much from radium in itself. I think it will prove to be more of an agent of investigation. It will help us to understand the nature of matter and energy. We are all at sea now. We have theories, but there are too many exceptions to make the theories absolutely reliable. We don't know actually what electricity is. There is the undulation theory and there is the bombardment theory. We have plenty of evidence to support each of these theories, but then, as I say, we have so many blamed exceptions that we cannot be sure. In working out the future we must understand the nature of our subject, and radium, I believe, will help us to do it.

"And there isn't much radium in the world anyhow. You know I am searching for it night and day. Well, out of 3,000 specimens we tested in this laboratory last week, only one contained radium. That shows how scarce it is.

"From a practical standpoint the most tremendous thing in the problem of electricity is the fact that we only get about 15 per cent. of the energy of the coal we burn. 85 per cent. goes up the chimney.

"Now if we could find a way to get the energy out of the coal by some direct process, without wasting 85 per cent. of it, the result would be"——

Mr. Edison raised his hands, closed his eyes and gave a soft, prolonged whistle.

"It would so multiply and so cheapen electric power as to inaugurate a new epoch in the history of the world. It is practically impossible to exaggerate the consequences of a discovery that would produce electricity direct from coal, or in any way to avoid the waste consequent upon the use of boilers and engines."

"Is such a discovery within the range of reasonable possibility?"

"It is. I expect to see it done. I have done it myself, and so have others, but not in a way to make it commercially valuable.

"How?"

"I have burned carbon and Chilian saltpetre together in an electrolite and have thus produced electricity direct. But that was merely a scientific success. It would cost too much to produce power in that way and the conditions would not be possible in the production of power for commercial purposes.

"There are other ways too of producing electricity by direct process. Heat applied to the juncture of certain metals—bismuth and antimony, for instance—will do it.'

"Last summer we rigged up a little experiment here, and by applying the heat of a small oil lamp to the juncture of metals we got sufficient power to run an electric fan.

"But all the discoveries so far have failed to give us the secret we are looking for. We need a process, simple and inexpensive, that will save the 85 per cent. of power.

"It will come, I am confident of that. There are about 300,000 scientific men at work in the world digging out, testing, analyzing.

"What the world needs are not facts so much as corelators. We want men who can bring the facts together, compare them and work out the law.

"We want men like that wonderful Russian chemist, Mendeleeff, the author of a periodic of chemistry, who deduced from correlated facts three unknown metals, which we have to-day explaining everything about them, their salts and sulphides, their weight, structure and melting point.

"Some day the great discovery will be made. A man will discover one fact in one part of the world and that will set some fellow at work on another fact in some other part of the world, and presently a lot of men will be working on the true path; and one day it will be announced to the world that electric power can be produced directly from coal."

"But we may all be dead then, Mr. Edison."

"Nonsense. I believe that you and I will both live to see it. It will come in our time. It is in the air. We are on the very threshold of another wonderful era."

It gave one a deep thrill to look into that kindly face, radiant with inspiration. More than 2,000 years ago old Thales, the Ionian, discovered electricity by rubbing a piece of amber; and, now after twenty centuries of grappling with the mystery, here was a plain American citizen—the man of all men to turn electricity most greatly to the world's uses—boldly picturing the future of that mightiest and most protean of nature's forces.

"When that discovery is made the steam engine will be driven out of use. It will then be possible to have airships. I expect to see airships flying before my death. I do not think that they will fly very high, but they will be able to go a little higher than the trees and buildings.

"Such a discovery will make it possible to drive ships across the sea by electricity at a rate of 40 or 50 miles an hour—three days across the Atlantic from shore to shore.

"Why, power will be so cheap and so easily distributed that a multitude of new industries—impossible now because of the cost of labor—will spring into existence.

"The direct process will give the world electricity at such a low cost that electric light can be used by everybody, and railways can be operated at a fraction of their present expense. The city of New York could be lit as brilliantly in the night time as in the day time, without any additional cost.

"The human race may well look forward with hope toward the day in which the discovery will be announced, for after that the world will be greatly transformed.

"It is all a matter of understanding what energy is. I remember saying to DuBois-Reymond, the great professor of physiology in the University of Berlin, 'what makes my finger move?' "—Mr. Edison held up his forefinger and waggled it—"and he answered, 'I don't know; I have worked in vain for thirty years to find out what form of energy that is.'

"When you wind up a clock you transform the energy of beefsteak into mechanical energy stored in a steel spring. But who can tell you how the one form of energy was converted into the other form?

"I have tried hard to get at the secret through which the energy stored in coal must be transformed into electricity. It is too much for me. I am stumped. I don't know enough. But the man who does know enough will appear before long."

Mr. Edison smiled and passed his hand across his eyes. Then he lifted the little boy at his knee to a chair and was presently lost to all other things in his eagerness to show him the wonders of a fly's wing seen through a powerful microscope under the electric light.

COPPER CHANGING TO GOLD

In radium, we are told, has been found the philosopher's stone of the alchemists' dreams. It may not transmute the baser metals into gold and silver, but it seems to have opened the gate to the secrets of Nature's laboratory, showing us that uranium may be a parent substance, and that radium itself breaks up into helium and perhaps lead. Mr. Donald Murray, of London, has brought to notice curious groupings of metals that suggest further transmutations. Lead and silver are almost invariably found together in mines, although they have little chemical attraction, and there are reasons for inferring that silver is a disintegration product of lead. In the same way we may conclude that copper is changing to gold. This view is meeting with approval, and a long ridiculed idea is gradually developing into a fundamental principle of twentieth century science.

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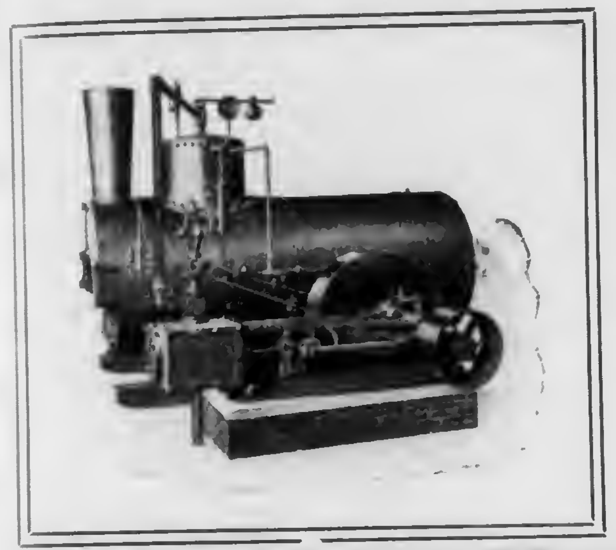

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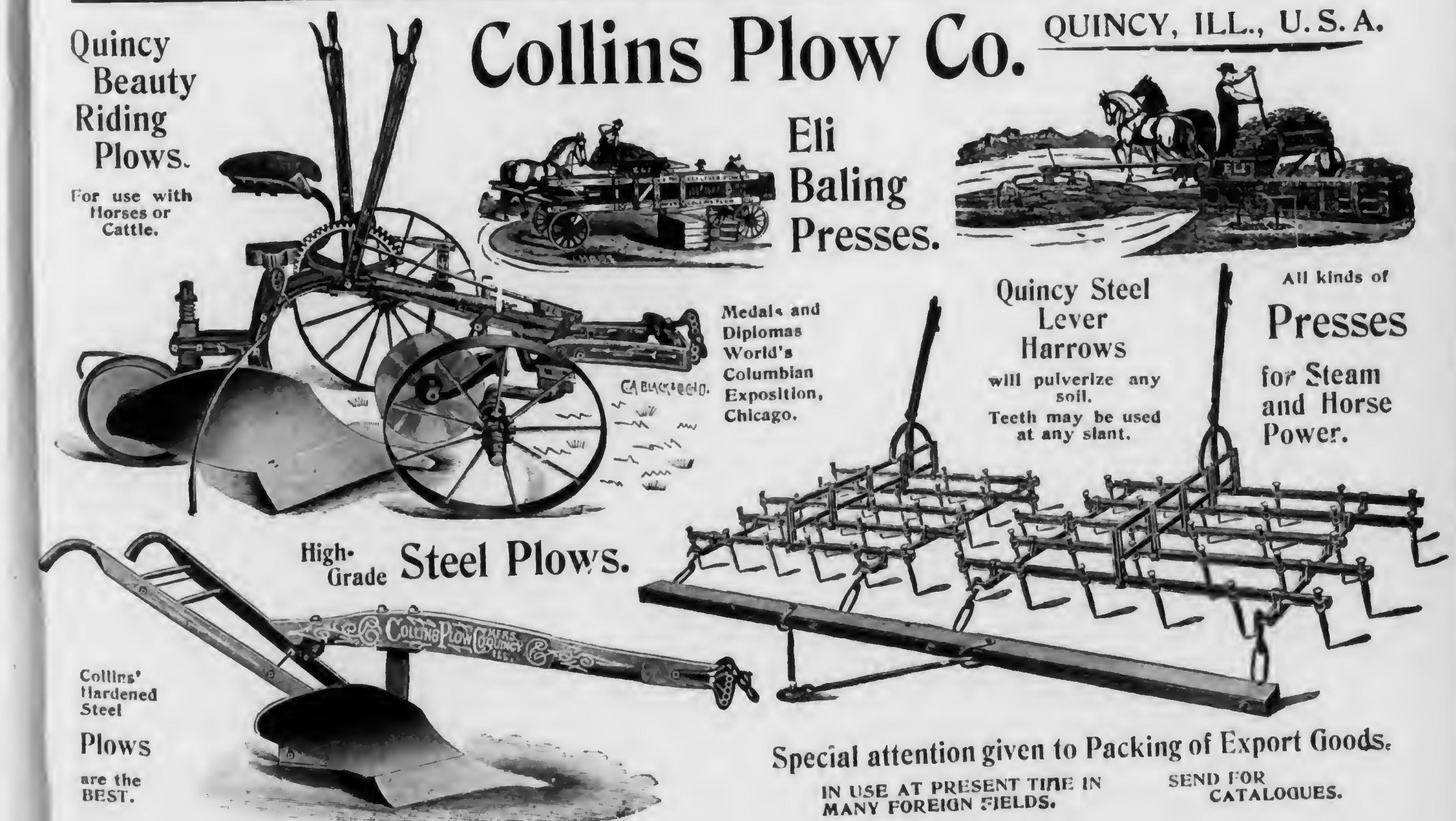

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SOME RECENT INVENTIONS

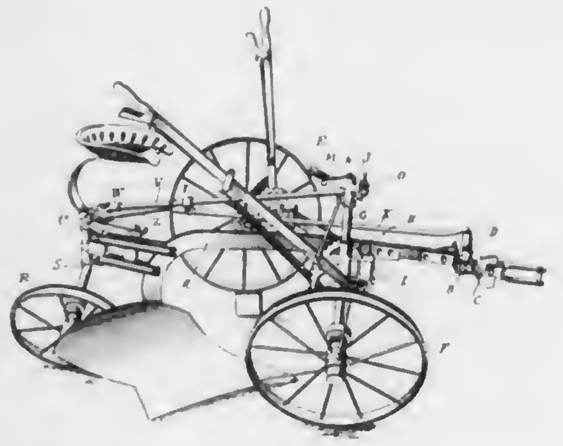
The following recent inventions have been specially reported for the EXPORT IMPLEMENT AGE by C. LeRoy Parker, Solicitor of Patents, 707 G street, N. W., Washington, D. C., U. S. A.

Wheeled Plow

No. 771,316. C. H. Melvin. Oct. 4, 1904.

This invention relates particularly to means for regulating the furrow-wheels of three-wheeled plows by the draft, whereby a change in direction of the draft alters the angles of the wheels in turning the plow.

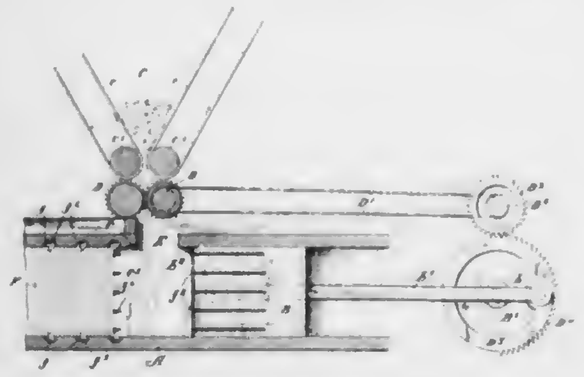
The principal objects of the invention are to obtain proper control of the wheels for turning them by the draft, whether the implement is used either with or without a tongue: to provide improved connections between the draft and both the front and rear furrow-wheels, whereby the angles of both wheels will be regulated properly on turning the team and to mount the wheels and arrange such connections so as to permit a short turn of the implement by the natural draft of the team when pulled in the desired direction.



Cotton Press

No. 775,481. A. D. Thomas. Nov. 22, 1904.

For the economical baling of cotton at the present day, it is essential to produce a bale of the desired density in the original operation without subjecting it to the action of a compress, and attempts have been made at such production. As heretofore produced, a square bale has been formed of a continuous web or bat of cotton folded back and forward on itself, and then such bale compressed to the desired density. It is evident that such folding of the bat or web and then subjecting it to compression has a tendency to buckle or upset the fibers at the folding point, the fibers at such point being therefore more or less injured, besides giving to the bale on the line of the fold an increased bulk.



It is the general object of the present invention to provide a baling-press wherein the cotton in the form of a bat or web may be arranged in separate layers one upon the other without the objectionable fold present in the old form of bale.

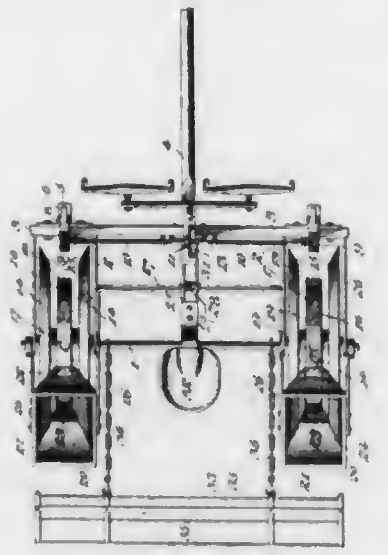
In carrying out the general features of the present invention the bat or web, as it is fed from a suitable hopper, is pulled apart or severed into lengths equal to the cross-sectional area of the bale, and these separated portions of the bat or web are laid one upon the other, and successively compressed, so that as a finished bale the product presents a series of layers separate with respect to each other, yet superimposed and pressed together, so that such layers may be taken separately and individually from the bale, or a bunch of said layers may be so taken and transferred to the cotton mill machinery rapidly, cheaply, and without the necessity of pulling apart the continuous bat or web of the old form of the bale.

Two-row Planter

No. 775,033. Martin B. Gooing. Nov. 15, 1904.

This planter comprises a hopper, a rotary feed-wheel provided with cups in its periphery and means for securing prongs on its periphery, and a reversible plate carried by the hopper and having an edge conforming to the periphery of the feed-wheel and an edge provided with recesses through which prongs may work.

The operation of the planter is as follows: Assuming the hopper 20 to be filled with corn in its lowest position and the plate 23 to be disposed so that the edge of the same will be but a slight distance from the periphery of the feed-wheel 16, thereby preventing the passage of the seed between the parts, the plows 7 are then simultaneously adjusted, by means of the lever 11, to a depth required for the seed to be deposited. As the planter moves the plows 7 cut furrows, and each feed-wheel 16 passes through its hopper 20, taking out through the front slot 22 seed in the cups 17 and drops the same slightly in advance of that portion of the covering-wheels 14 which contacts with the ground. The bevel-faces 15 when they reach the seed thus dropped close over the seed deposited in the furrow made by the plow 7, and the leveler 33 then smoothes the ground. As the hoppers feed out their contents they are raised by removing the pin 30 from one perforation of the link 28, depressing the link 28, and placing the pin in another perforation, so that the contents will always be in a position to be caught by the feed-wheels 16.

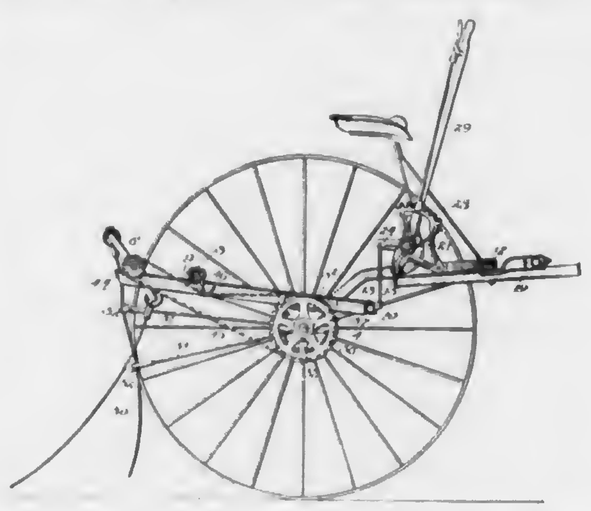


Hay Tedder

No. 771,418. John W. Clark. Oct. 4, 1904.

This invention consists primarily of a novel gear connection between the driving axle and the multiple crank-shaft and an improved frame construction.

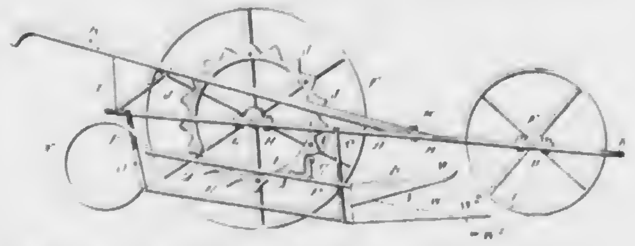
The patent covers a hay-tedder comprising traction-wheels, an axle driven thereby, wheel-frame and a multiple crank-shaft mounted on its rear end, a gear connection between the axle and crank-shaft, comprising an internal gear-wheel mounted to rotate about the axle and means for clutching it therewith, a pinion journaled on the axle and supported in a bracket secured to the wheel-frame, a sprocket-wheel secured to the pinion, a pinion journaled on a fixed part of the frame and meshing with the first mentioned pinion and the internal gear-wheel, a sprocket-wheel on the crank-shaft and a chain connection between the two sprocket-wheels.



Vine Cutter

No. 772,228. F. M. Ewell. Oct. 11, 1904.

In the make-up of this invention, a pair of spring-bow shears N, similar to the well-known yielding sheep shears, are supported by hangers O, depending from the beam A. The lower ends of the hangers O are secured to the lower arm R of the shears by bolts or other approved means. It will be noticed that the shears are supported and arranged for operation through means of a standard S on the upper arm Q of the shears, having an inturned end T with a roller U therewith, the latter being located adapted for engaging the cam teeth J, whereby the upper blade V of the shears is worked upon rolling action of the wheel F as the device is shoved along. The forward end W of the blade V is turned upwardly the better to engage and guide vines into cutting position between it and the lower blade W^1. The latter's point W^2 is extended and pointed, the better for picking up vine runners laying close to the ground.



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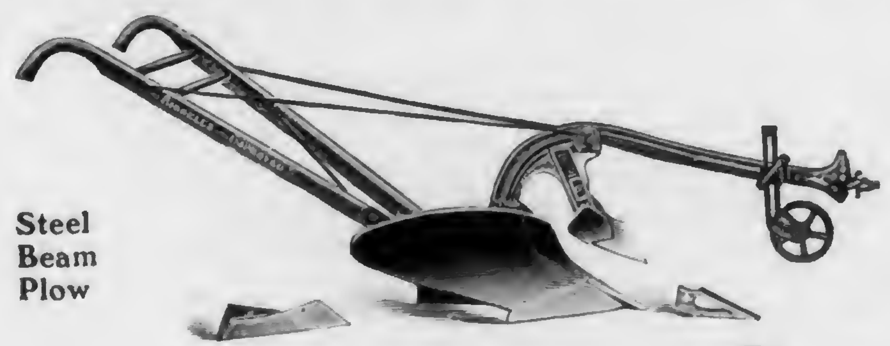
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The Ohio Cultivator Co. - Bellevue, Ohio

A MANUFACTURING ADVANTAGE

Mr. F. E. Saward, editor of the *Coal Trade Journal*, contributes to the *Engineering Magazine* some figures showing the growth of the coal production of the United States. The early development of coal mining in Great Britain gave that country an initial advantage in manufacturing, but during the last thirty years both Germany and the United States have been gaining, and the latter country is now far in the lead. In 1875 the production of the three countries was, in round numbers, Great Britain, 150,000,000 tons; Germany, 53,000,000; United States, 52,000,000. In 1904 the figures were, Great Britain, 260,000,000; Germany, 180,000,000, and the United States 352,000,000 tons of 2,000 pounds each, an increase for Great Britain of 73 per cent., Germany 250 per cent., and the United States 577 per cent.

Of the American product the anthracite mines produce 74,000,000 tons and the bituminous mines 278,000,000. Seven thousand, six hundred and seventy-one machines were in operation, producing 70,000,000 tons. About 550,000 miners were at work. The bituminous miners work almost uniformly eight hours, while in the anthracite mines the miners work on an average five hours, and the loaders and other laborers work nine hours. Pay has been raised twice in the last five years, 10 per cent. each time, and Mr. Gompers estimates the abolition of the truck system to be worth 10 per cent. more, as enabling the miner to regulate the expenses better.

The larger part of the coal produced is consumed at home. Only 21,000,000 tons out of 352,000,000 was exported or used to coal outward bound steamers, while of Great Britain's 260,000,000 tons, 73,000,000 went abroad. The vast extent of the coal trade may be realized when it is said that the total amount of freight moved by American railroads in 1904, after making allowance for freight that traveled by two or more roads, is estimated at 700,000,000 tons. The coal mined thus equals in weight one-half the total freight carried in the United States, though not constituting one-half of it, as much coal is conveyed by water.

It is unnecessary to dwell upon the importance of the coal trade to the prosperity of the United States. The fact that so small a percentage of the coal mined is exported points to a field for American enterprise to engage in, but also an indication that the growth of manufacturing industries here is capable of absorbing whatever increase of production may result from improved methods or opening of new territory. When Mr. Edison's plans for the manufacture of electricity directly from coal at the mine's mouth are put into effect an immense increase of production will be demanded, and at the same time the air of the great cities will be purified of the dust and smoke that have marked the growth hitherto of manufacturing and the coal traffic.

GERMAN-AMERICAN TRADE

That a reciprocal tariff agreement should exist between the United States and Germany is clearly evidenced from a statement recently issued by the Bureau of Statistics of the Department of Commerce.

It is shown that Germany stands second in the order of magnitude of our trade with foreign countries, both as to imports and exports. The largest imports into the United States during the fiscal year 1905 were: From the United Kingdom, 176 millions; from Germany, 118 millions; from Brazil, 100 millions; from France, 90 millions; from Cuba, 86 millions, and from Canada, 62 millions. Our largest exports in the fiscal year 1905 were: To the United Kingdom, 523 millions; to Germany 194 millions; to Canada, 141 millions; to France, 76 millions; to Netherlands, 73 millions; to China, 53 millions; to Japan, 52 millions, and to Mexico, 46 millions.

Thus Germany stands clearly second in importance in our trade relations with the various countries of the world, both as to imports and exports. Indeed it is not improbable that the true figures of our trade with Germany are even more than those here presented, since there is reason to believe that a considerable share of the merchandise consigned from the United States to the ports of Netherlands and Belgium passes on through the waterways of those countries to Germany, and that some part of the merchandise imported into the United States as from the ports of Netherlands and Belgium originates in Germany and finds its way to the United States by like routes; and this belief is supported by the fact that Germany's statements of imports from and exports to the United States are usually slightly greater than our own figures of trade with that country.

Trade between the United States and Germany in the fiscal year 1905 aggregated over 300 million dollars. The imports from Germany were 118 million dollars in value and exceeded imports from that country in any earlier year. The exports to Germany were 194 million dollars in value and exceeded our exports to that country in any earlier year except 1904, in which the total was a little over 214 millions, this decrease in 1905, compared with 1904, having occurred in raw cotton and being due altogether to a fall in price, since the quantity in 1905 was greater than in 1904. Comparing conditions in 1905 with those of a decade earlier, it may be said that our imports from Germany have grown from 81 million dollars in 1895 to 118 millions in 1905, while our exports to that country have grown from 92 million dollars in 1895 to 194 millions in 1905. Thus our imports from Germany increased 37 million dollars in the period from 1895 to 1905, and our exports to that country increased 102 millions in the same time.

Manufactures form by far the largest part of our imports from Germany. There are a few articles of raw materials for use in manufacturing which Germany brings, presumably from her own colonies and exports to the United States, such as crude rubber, tin, wood, feathers, hides and skins, furs and fur skins, diamonds and wool; but they are of comparatively small value, aggregating probably less than ten per cent. of the total of our imports from that country. Manufactures are by far the most important, and indeed the bulk of the 118 million dollars' worth of merchandise imported from Germany. These manufactures include cotton goods, about 14 million dollars in value, chiefly laces, edgings, embroideries and knit goods; chemicals, drugs and dyes, about 15 million dollars, including coal tar colors and dyes, muriate of potash, indigo and alizarine colors, and other articles of this kind; iron and steel manufactures, about four million dollars, including cutlery, machinery of various sorts and needles; leather manufactures, over three million dollars, including gloves and "upper leather;" silk manufactures, about five millions, including dress and piece goods, velvets, plushes, etc.; manufactures of fibres, about three millions; woolen goods, three millions, of which about one-third was dress goods, one-third cloths and the remainder miscellaneous; glass and glassware, over one million dollars; cement, over — million dollars; metals and metal compositions and manufactures thereof, over two millions; paper and manufactures thereof, over three millions; and toys, more than four million dollars. This importation of toys from Germany has grown steadily, having amounted to $1,732,739 in 1895 and $4,512,837 in 1905. Germany is the principal source of the foreign toys imported into the United States, the total imports of toys in 1905 having been $4,964,457, of which Germany supplied, as above indicated, $4,512,837, France, $172,041; other countries of Europe, $158,212, and the remainder of the world, $121,367, about nine-tenths of our total importations of toys, therefore, having been from Germany.

AMERICAN LAWN MOWERS

Any of our readers who are interested in lawn mowers for horse and hand use, who have not secured a copy of the latest catalogue of Chadborn & Coldwell Mfg. Co., Newburgh, N. Y., U. S. A., should write to them, and they will be pleased to send a copy gratis. They are very large manufacturers of lawn mowers of every kind and style, and having been established since 1870, they enjoy a trade in all the markets of the world. Correspondence in any language will be promptly and satisfactorily attended to.

THE WORLD'S RAILROADS

The United States leads the world both in the present mileage and the recent growth of its railways. Of the total railway mileage of the world, aggregating 534,000 miles for 1904, 211,074 miles were in the United States, 35,323 miles in European Russia, 32,067 miles in Germany, 28,102 miles in France, 26,950 miles in India, 24,120 miles in Austria-Hungary, 22,634 miles in the United Kingdom, 19,611 miles in Canada, 15,500 miles in Africa, 14,113 miles in Australia, 10,350 miles in Mexico, 9,951 miles in Italy, 9,368 miles in Brazil, 7,097 miles in Sweden, 7,322 miles in Siberia, Manchuria, and other Asiatic possessions of Russia, 4,405 miles in Japan, and 1,176 miles in China. It was not until 1835 that the number of railways in operation in the United States first reached as much as 1,000 miles, being in that year 1,098 miles; by 1850 the total had grown to 9,021 miles; by 1860 to 30,626 miles; in 1865, 35,085 miles. In the decade from 1865 to 1875 the mileage more than doubled, the total for the last year named being 74,096; the total for 1885 was 128,320 miles, that for 1895 181,115 miles, for 1900 194,262 miles, and for 1905 217,328 miles, their aggregate cost being estimated by *Poor's Manual* for 1905 at the enormous sum of eleven and two third billions of dollars, out of an aggregate cost of thirty seven billions for the entire world.

Export Implement Age

THIS JOURNAL

is exclusively devoted to American agricultural implements and machinery, pumps, windmills, farm tools, dairy supplies and hardware specialties and it

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who present their goods through our columns. We publish each month. Each issue full of facts.

One Dollar (Four Shillings) is the subscription price for ONE YEAR (12 issues), which also entitles you to receive information by writing us direct, on any subject connected with the lines we represent. The ***Export Implement Age*** is certainly worthy of your interest and support.

We should be pleased to place you in communication with the manufacturers of any special class of machinery that you desire to purchase, and you may also consider our services at your further command.

Sign Enclosed Blank and remit by International Money Order to EXPORT IMPLEMENT AGE, No. 1010 Arch St., Philadelphia, Pa., U. S. A.

CE JOURNAL

est exclusivement consacré aux machines et instruments agricoles Américains, pompes, moulins à vent, outils de ferme, appareils pour laiteries, articles spéciaux de quincaillerie.

IL REPRÉSENTE LES MAISONS AMÉRICAINES LES PLUS ANCIENNES ET LES PLUS VASTES,

les quelles offrent leurs produits par l'intermédiaire de nos colonnes. Le journal est mensuel. Chaque numéro abonde en faits d'utilité pratique.

Abonnement pour un an: ***Un Dollar (quatre schellings ou cinq francs.)*** Tout abonné qui voudra bien nous écrire directement recevra tous les renseignerments qu'il pourra désirer sur les matières dont s'occupe le journal. ***L'Export Implement Age*** est assurément digne de votre intérêt et de votre concours.

Nous serions heureux de vous mettre en relations avec les fabricants de n'importe quelle catégorie de machines que vous pouvez désirer vous procurer, et nos services vous sont, d'ailleurs, complètement acquis.

Signer le bulletin ci-inclus et envoyer un mandat de poste international à l'EXPORT IMPLEMENT AGE, No. 1010 Arch Street, Philadelphia, Pa. (Etats-Unis d'Amérique).

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ist ausschliesslich amerikanischen landwirthschaftlichen Maschinen und Geräthen, sowie der Fabrikation von Pumpen, Windmotoren, Landwirthschafts-Werkzeugen, Molkereiausstattungen und den diversen Branchen der Stahl- und Eisenwaaren-Industrie gewidmet. Dieselbe

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Tendremos mucho gusto en poneros en correspondencia con los fabricantes de cualquiera clase especial de maquinaria que deseéis comprar, y podéis también considerar nuestros servicios á vuestra disposición.

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TRADE OF THE UNITED STATES

Trade of the United States with the United Kingdom in the fiscal year 1905 aggregated practically 700 million dollars and formed more than one-fourth of our total foreign commerce. Figures just presented by the Department of Commerce and Labor show that the exports from the United States to the United Kingdom in 1905 aggregated 523 million dollars out of a total of 1,518 millions, and thus formed 34 per cent., or practically one-third of our total exports; imports from the United Kingdom aggregating 176 millions out of a total importation of 1,117 millions, and thus formed about 16 per cent., or practically one-sixth of our total imports. On both the import and export sides of the account our trade with the United Kingdom is larger than with any other country. The imports from that country, as already indicated, were 176 millions, against 118 millions from Germany, 100 millions from Brazil, 90 millions from France, 86 millions from Cuba, 62 millions from Canada, 52 millions from Japan, and 40 millions from Mexico. The exports to the United Kingdom were 423 millions, against 194 millions to Germany, 141 millions to Canada, 76 millions to France, 73 millions to Netherlands, 53 millions to China, 52 millions to Japan, and 40 millions to Mexico. Comparing conditions of our trade with the United Kingdom in 1905 with those of 1895, the imports from that country have grown from 159 million dollars in 1895 to 176 millions in 1904, an increase of 17 millions, or a little over 10 per cent., while the exports to that country have grown from 387 millions in 1895 to 523 millions in 1905, an increase of 136 millions, or about 35 per cent. The principal articles which form our enormous trade with the United Kingdom are chiefly manufacturers' materials and manufactures on the import side, and foodstuffs, manufacturers' materials and manufactures on the export side. While the United Kingdom is not a large producer of raw material for use in manufacturing, at least in excess of her own requirements, she exports considerable quantities of material of this character drawn from other parts of the world, especially from her colonies.

Under the head of foodstuffs exports are included wheat, flour, corn, oats, meats, butter, cheese, cattle, sheep, canned salmon and fruits. Under the head of manufacturers' materials, by far the most important item is cotton and to this should be added leaf tobacco, lumber, and timber. Under the classification manufactures, the most important items of export to the United Kingdom are copper, 14 million dollars' worth; mineral oil, 15 millions; leather and manufactures thereof, 15 millions; and various manufactures of iron and steel amounting to over 21 million dollars. The principal foodstuffs sent to the United Kingdom during the year were cattle, valued at nearly 37 million dollars; flour, 11½ millions; wheat 3¼ millions; corn, nearly 18 millions; fruits, 6½ millions; fresh beef, 22 millions; canned beef, 4 millions; bacon, 21 millions; hams, 19½ millions; pork, 7 millions; lard, 17½ millions; and butter and cheese, a little less than one million dollars each. Of manufacturers' materials, cotton amounted to 176 million dollars in value, while leaf tobacco amounted to 9¼ million dollars, lumber 5½ millions, and timber nearly 4 millions.

No feature of the export trade of the United States in 1905 has shown a larger growth than that of the trade with China and Japan. In the ten months ending with October exports to China are more than 50 million dollars in value, against 20 millions in the same months of 1904, and 13 millions in the corresponding months of 1903; and those to Japan are 40½ millions, against a little less than 22 millions for the same period in 1904 and 16 millions in the corresponding months of 1903. Thus, in the case of Japan exports have more than doubled as compared with 1904 and practically trebled as compared with 1903, while in the case of China exports are two and one-half times as much as in 1904, and have practically quadrupled since 1903. No other countries of the world to which our exports are sent show gains approximating those of China and Japan. To Cuba there is an increase of approximately 40 per cent., and to Argentina about 33 per cent., but China and Japan are the only countries in the long list of those to which our exports are sent which show a gain of 100 per cent. or more. Should the rate of growth continue until the close of the year, the total exports from the United States to Japan in the calendar year will be practically ten times as much as a decade ago, in 1895, and those to China fourteen times as much as in 1895. This upward movement in the figures of exports to China and Japan began to be apparent in 1904, the exports to China from the United States in that year being practically 28 million dollars, against 15 millions in the immediately preceding year, and those to Japan 21½ millions, against a little less than 21 millions in the immediately preceding year, but the growth in each case in 1905 has been even more striking than that of 1904.

A WONDERFUL RAFT

The floating steel dry dock Dewey, built to lift a 20,000-ton battleship out of the water, left the Patuxent River, in the Chesapeake Bay, December 28th, in tow of three vessels of the United States Navy, on her long journey of 14,000 miles to the Philippine Islands, and it is expected that she will be at sea for six months. The gigantic steel box was headed down the bay toward Hampton Roads and the open sea, with the collier "Brutus" towing ahead and the colliers "Caesar" and "Glacier" on either side, while the navy tug "Potomac" acted a convoy.

The huge dock was towed in this way until ready to leave Hampton Roads, as the channel of the Chesapeake is not wide enough for the unprecedented long tow to stretch itself out.

It is calculated that the dock will make about eighty-five miles a day, which will prolong the voyage to 150 days if she should go straight through to her destination without a halt. The dock is loaded with several steamboat cargoes of stores, and its crew of 30 men will get double pay and free passage home.

It is fitted with wireless telegraph apparatus for communication with ships of the tow and shore stations. There is a water distilling apparatus and a complete shop aboard. Should she go adrift and be threatened with a lee shore there are twelve 4,000-pound and 9,000-pound anchors aboard, which may be cast out to catch the bottom and save the monster.

The towing gear for the gigantic mass of steel and the ships to take her out to the Pacific is the most wonderful ever made for any vessel. The manilla hawsers stretched between the colliers and the dock are of 15-inch ropes, and two of them are wound together to make one rope 30 inches in thickness. Wherever chains are needed, such as in fastening the tow lines or being attached to the anchors, the links are 2½ inches thick, making the chains nearly as big as a man's leg.

As soon as the tow gets to the open sea it will be strung out for its entire length, which will be a mile and a half. No tow ever went to sea with such a length as this.

The Hydrographic Office of the navy has sent out a world-wide warning to masters to vessels to lookout for the tow and not to get afoul of it by night. In order to avoid accidents, the string of vessels is to be illuminated from end to end. The dock has its own electric light plant and system of ventilating fans.

When the dock meets with heavy weather during the voyage it is planned that the hull shall be filled with water until nothing appears above the turbulent sea but the side walls of the dock.

REWARD FOR INVENTORS

The King of Italy recently made an announcement offering substantial rewards for the invention of several things. There is to be an exposition at Milan this summer, and the King of Italy will disburse 450,000 francs to exhibitors of inventions at that exposition. The contest is open to the world, and the prizes are in part as follows:

First—A prize of 50,000 francs for a simple and manageable device to protect electrical mechanics from danger incurred in the performance of their duties.

Second—Fifty thousand francs for an automatic railroad coupling device.

Third—Fifty thousand francs for the best organization for the supply of wholesome milk to populous quarters.

Fourth—One hundred thousand francs for the best plans for poor people's cottages.

Fifth—Fifty thousand francs for an improved motor boat.

Sixth—One hundred thousand francs for an improvement in the make or process for employing a machine already in use which is recognized to be of real merit.

Not only does the King's offer cover the mechanical field of inventions, but it also takes into consideration philanthropy. The rewards to those persons who have been able to invent a mechanical device have always been liberal, but it has not always been the case that a person who suggested a form of philanthropy was rewarded save in his own mind.

PLOWS FOR EXPORT

We desire to call the attention of our readers to the advertisement of the South Bend Chilled Plow Co., which appears on the front cover of this paper. This company display in their advertisement a plow with reversible point and wing, which has very superior advantages. The plow has been popular in the foreign markets where it has been introduced, and the manufacturers recommend it highly for clay, gravel, stone or hard pan soil. The South Bend Chilled Plow Co. have had an excessive export trade, and are prepared to handle promptly and satisfactorily all inquiries and orders received by them. They solicit correspondence.

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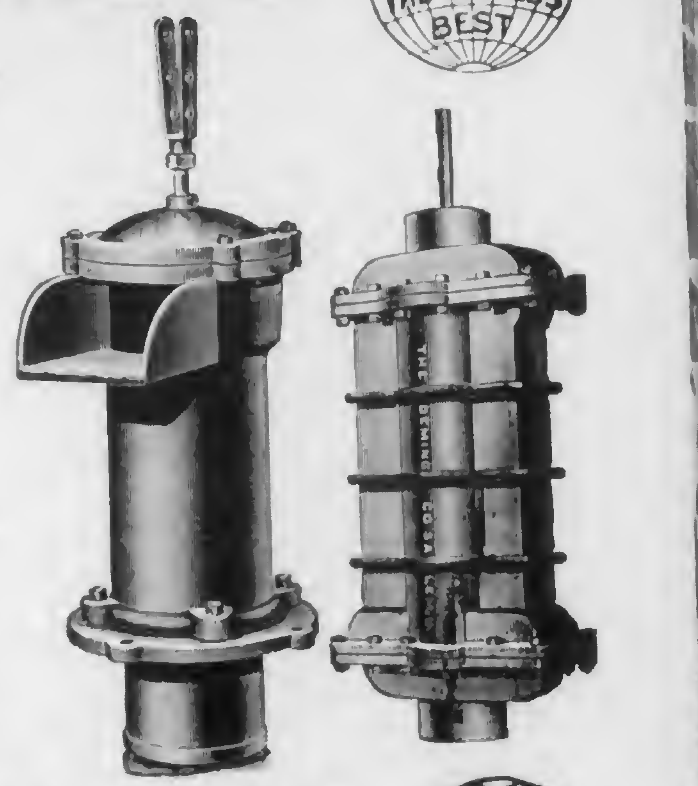

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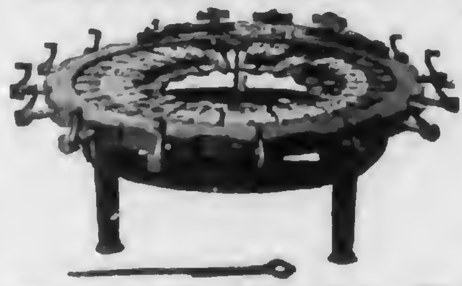

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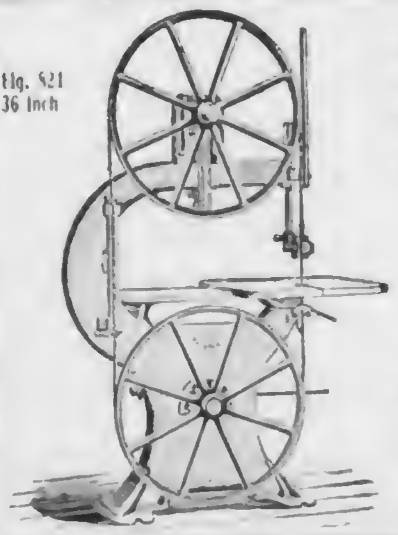

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Band Saws

SIZES:
20 in. . . . . Belt power
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20 in. . . Combined foot and belt power
26 in. . . . . Belt power
32 in. . . . . Belt power
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These saws are symmetrically designed, correctly manufactured, and are supplied with Wright's non-friction roller saw guides.

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The Silver Mfg. Co.
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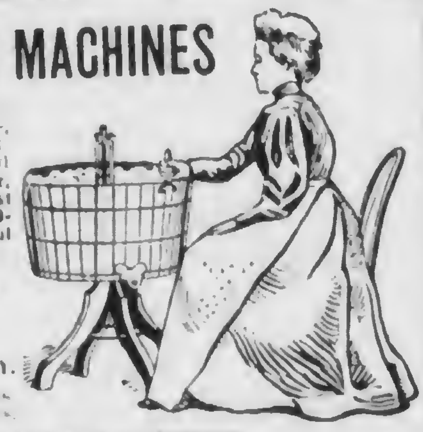

"1900" Ball-Bearing WASHING MACHINES

The "1900" Ball-Bearing Washing Machines represent over twenty-one years' practical experience, and, unlike any other washer upon the market do not tear and wear the garment, but toss and tumble the garment through a whirlpool of water, thus forcing the water through the finest or coarsest fabrics, causing the clothes to become ABSOLUTELY CLEAN, without boiling or scrubbing, without wear or tear, and without the use of chemicals.

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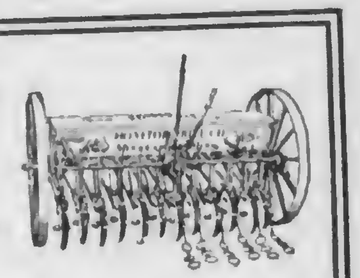

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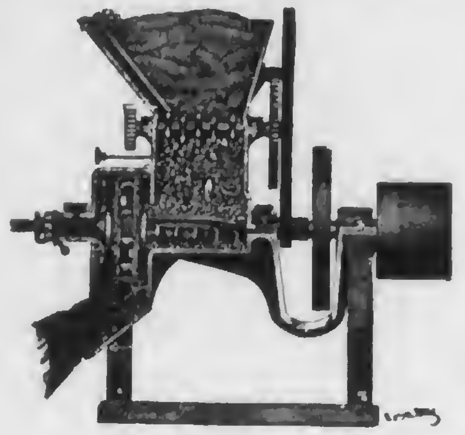

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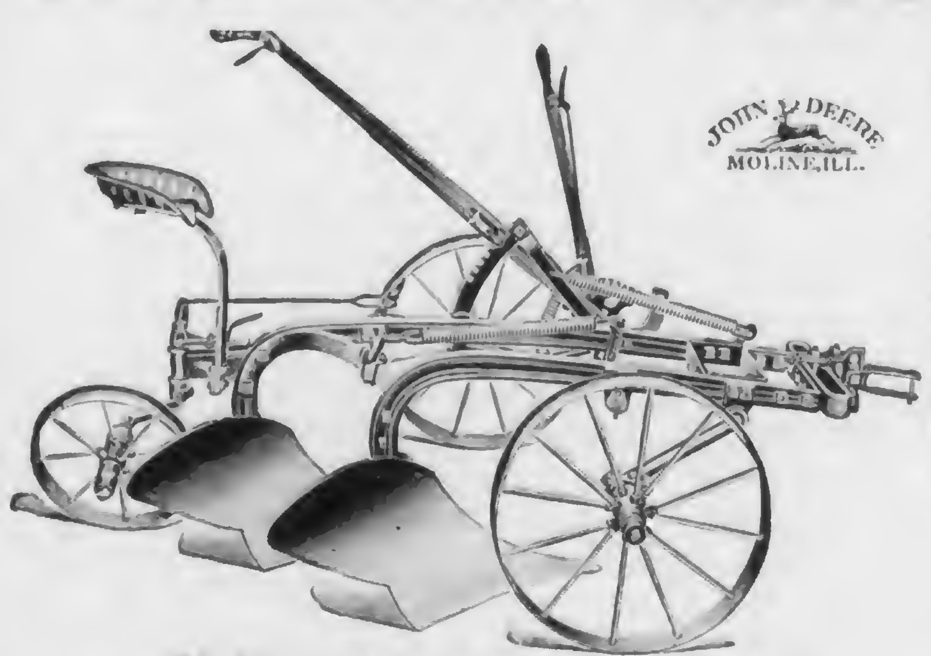

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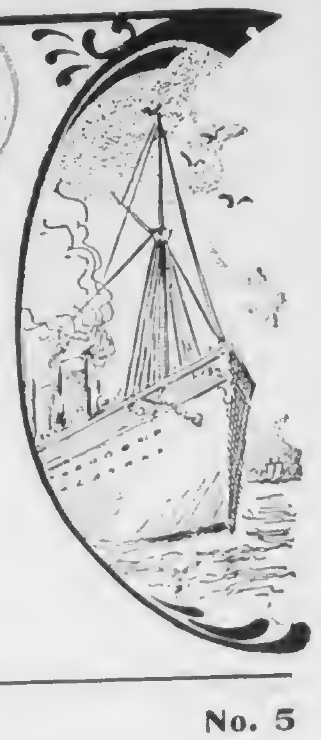

A Monthly Magazine Devoted to American Agricultural Machinery, Farm Supplies, Vehicles and Vehicle Materials, Machine Tools, Hardware Specialties, Etc.

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Papier Rose

TEXTO ESPANOL
Papel Amarillo

DEUTSCHER TEXT
Blaues Papier

Vol. XIII. PHILADELPHIA, PA., U. S. A., FEBRUARY, 1906. No. 5

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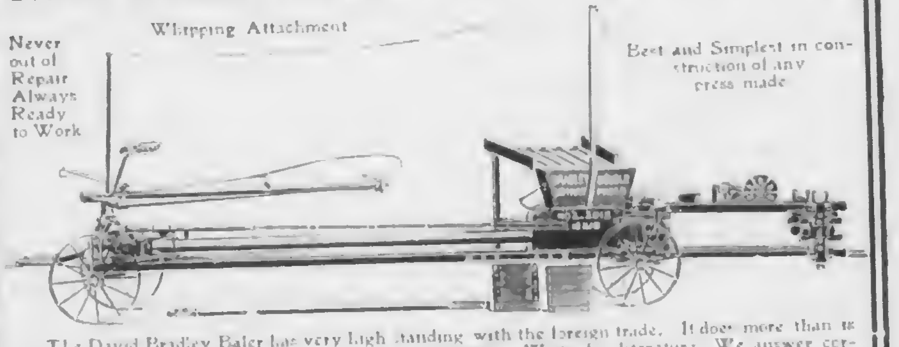
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Best and Simplest in construction of any press made

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No. 95

and for this reason a plow that is a rapid seller

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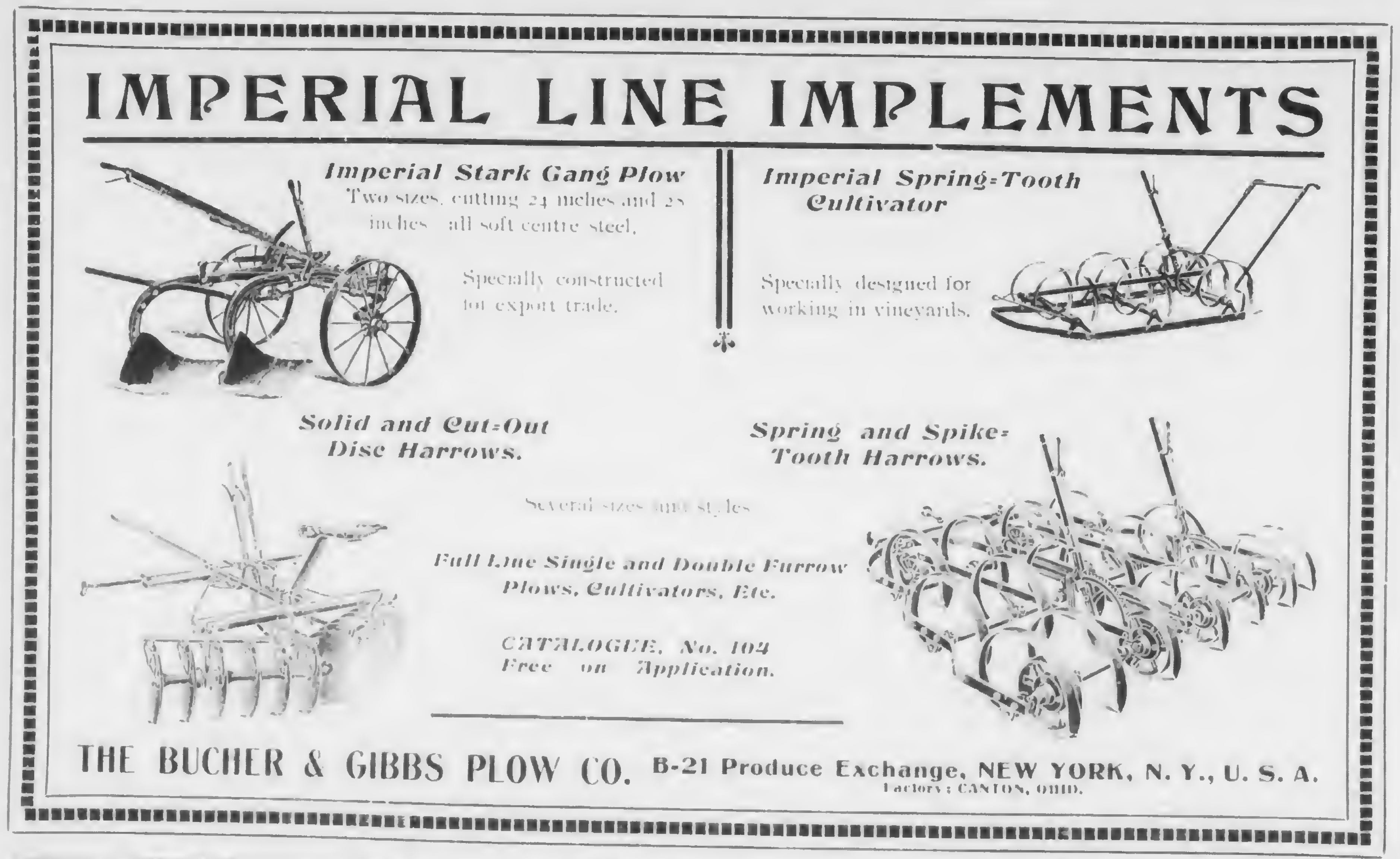

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Imperial Stark Gang Plow
Two sizes, cutting 24 inches and 28 inches all soft centre steel.
Specially constructed for export trade.

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Several sizes and styles.

Full Line Single and Double Furrow Plows, Cultivators, Etc.

CATALOGUE, No. 104
Free on Application.

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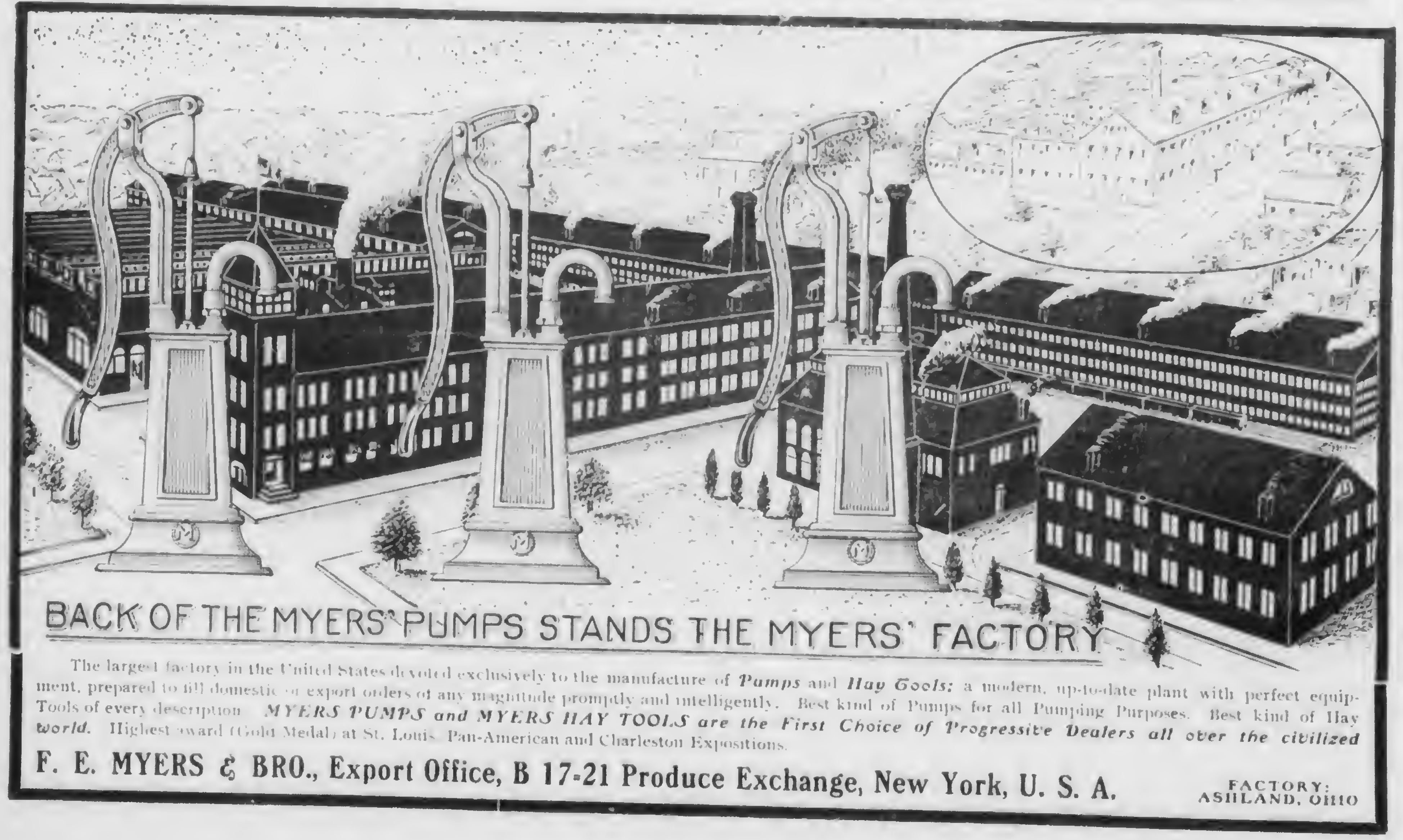

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The names of firms given below, together with the goods mentioned, are arranged for the convenience of buyers. Their products are given in the English, French, Spanish and German languages. These establishments are among the leading ones in the United States, are strictly reliable, have extensive facilities and are prompt in transacting business. They fully understand the export trade and carefully look after all foreign orders. The EXPORT IMPLEMENT AGE is kept on file in their offices, and any mention of the journal will be an incentive to even greater promptness on their part in obliging you. Inquiries from foreign buyers desiring information relative to American agricultural machinery or implements addressed to them will be given careful and prompt attention. Write in any language you prefer.

Rèpertoire à l'Usage des Acheteurs

Les maisons ci-dessous et les produits mentionnés ont été classés dans cet ordre pour la commodité des acheteurs de langues anglaise, française, espagnole et allemande. Ces établissements sont parmi les principaux des Etats-Unis, ils sont absolument sérieux, ils possèdent de grandes facilités, sont prompts en affaires. Ils connaissent à fond le commerce d'exportation et donnent tous leurs soins à l'exécution des commandes qui leur viennent de l'étranger. Ils conservent une collection de l'EXPORT IMPLEMENT AGE dans leurs bureaux, et la simple mention de ce journal stimulera davantage encore, si possible, leur zèle et leur promptitude à obliger leurs clients. L'EXPORT IMPLEMENT AGE, de son côté, donnera une prompte attention aux demandes de ronseignements sur machines et instruments agricoles américains, que peuvent lui adresser les acheteurs de l'étranger. Ecrire dans la langue que l'on préfere.

Directorio para los Compradores.

Los nombres de los artículos que fabrican las firmas ó casas mencionadas á continuación se dan, para conveniencia de los compradores, en los idiomas inglés, francés, español y alemán. Esos establecimientos, que se cuentan entre los principales de los Estados Unidos, están completamente acreditados, son dignos de toda confianza y tienen las mayores facilidades para ejecutar y despachar con prontitud todos sus negocios. Conocen á fondo el comercio de exportación y atienden con el mayor esmero à todos los pedidos que reciben del extranjero. Los números del EXPORT IMPLEMENT AGE se coleccionan en sus oficinas, y toda referencia á esta revista es un incentivo para atender con mayor prontitud aun á vuestros requerimientos. Todos los informes que pidan los compradores del extranjero serán suministrados á la mayor brevedad por esos fabricantes sobre la maquinaria agrícola é instrumentos de labranza americanos. Escribidles en cualquier idioma que prefiráis.

Firmen-Verzeichnis für Käufer.

Die Erzeugnisse der unten genannten Firmen sind für die Bequemlichkeit ausländischer Käufer in englischer, französischer spanischer und deutscher, Sprache hier wiedergegeben. Genannte Etablissemente gehören zu den bedeutendsten in den Vereinigten Staaten; sie sind in jeder Weise zuverlässig, besitzen ausgedehnte Facilitäten und erfreuen sich eines ehrenvollen Rufes. Alle von ihnen unternommenen Geschäftstransaktionen werden in promptester Weise zur Ausführung gebracht. Jedes hierin genannte Haus ist mit dem Exporthandel wohl vertraut und um auswärtige Aufträge eifrig bemüht. Das EXPORT IMPLEMENT AGE wird von all diesen Firmen gelesen, dient ihnen sozusagen als Informations-Register und dürfte somit eine Angabe dieses Journals bei event. Waarenbestellung nur zur Anregung grösserer Promptheit dienen, um p.p. Käufern in bestmöglicher Weise entgegenkommen zu können. Jede auswärtige Anfrage hinsichtlich amerikanischer landwirthschaftlicher Maschinen und Geräthe wird nicht allein prompte, sondern auch stets sorgfältige Aufmerksamkeit erhalten. Interessenten können sich jeder beliebigen Sprache zur Korrespondenz bedienen.

Ambulances
Carros de hospital
Krankenwägen (Ambulanzen)

Baling Presses (Hay, Straw, Etc.)
Presses à foin, paille, etc.
Prensas de Embalar (Heno, Paja, etc.)
Ballen Pressen (für Heu, Stroh, u. s. w.)

Bradley Mfg. Co., David, Bradley, Ill.	1
Collins Plow Co., Quincy, Ill.	29
Ertel Co., George, Quincy, Ill.	6

Beet Implements (Planting, Cultivating and Harvesting)
Betteraves (Instruments pour la culture des)
Instrumentos para el Cultivo de la Remolacha (Sembradoras, Cultivadoras y Cosechadoras)
Rübengeräte (zum Pflanzen, Pflügen und Ernten)

Moline Plow Co., Moline, Ill.	6

Binders, Self (Wheat, Rye, Oats, etc.)
Lieuses Automatiques (Blé, Orge, Avoine, etc.)
Agavilladoras Automáticas (Trigo, centeno avena, etc.)
Selbstbindemaschinen (für Weizen, Roggen, Hafer u. s. w.

Boilers.
Chaudières.
Calderas.
Kessel.

Leffel & Co., James, Springfield, Ohio	29

Bolts and Nuts.
Boulons et écrous.
Pernos y Tuercas.
Bolzen und Muttern (Mutterbolzen)

Columbus Bolt Works, Columbus, Ohio	36

Brakes (Vehicle)
Retrancas (Vehículo)
Frein (de Voiture)
Bremsen (für Fahrzeuge)

Potter Co., The Morgan, Fishkill on Hudson, N. Y.	3

Carriages
Voitures
Carruajes
Kaleschen und Wagen

Dapson & Wolf, Oneida, N. Y.	3
Studebaker Bros. Mfg. Co., South Bend, Ind.	36

Carriage Cloth
Wagentuch
Paño de carruaje
Drap de Voiture

Fairfield Rubber Co., The, Fairfield, Conn.	5

Carriage Materials
Articles pour voitures
Materials for Carriages
Wagenmaterial

Carts (Riding)
Charrettes (à siège)
Carretones (de Montar)
Frachtkarren (Reitkarren)

Dapson & Wolf Oneida, N. Y.	3

Cider and Wine Presses
Pressoirs à vin et à cidre
Prensas para Hacer Cidra y Vino
Kelterapparate für Wein und Apfelwein

Lansing Wheelbarrow Co., Lansing, Mich.	29

Clothes Washing Machines
Linge (machines à laver le)
Máquinas de Savar Ropa
Wäsche Waschmaschinen

"1900" Washer Co., Binghamton, N. Y	35

Coal Cars
Charbon (wagons pour)
Carros para Carbón de Piedra
Kohlenwaggons

Lansing Wheelbarrow Co., Lansing, Mich.	29

Coal Shutes
Charbon (Dalles à)
Canales para Descargar Carbón de Piedra
Kohlen Lade-Rinnen

Lansing Wheelbarrow Co., Lansing, Mich.	29

Corn Crushers
Mais (Concasseurs de)
Trituradoras de Maiz
Mais Zerquetschmaschinen

Sprout, Waldron & Co., Muncy, Pa.	8

Corn Harvesters
Mais (Moissonneuses de)
Cosechadoras de Maiz
Mais Erntemaschinen

Standard Harrow Co., Utica, N. Y	8

Corn Huskers and Shredders
Mais (Instruments à enlever et à déchirer les bractées du)
Desgranadoras y Picadoras de Maiz
Mais Enthülsemaschinen und Auswerfapparate

Bradley Mfg. Co., David, Bradley, Ill.	1

Corn Planters (Hand)
Mais (Semoirs de, à main)
Sembradoras de Maiz (A Mano)
Maispflanzer (für Handbetrieb)

Ohio Cultivator Co., The, Bellevue, Ohio	31

Corn Planters (Horse)
Mais (Semoirs de, à cheval)
Sembradoras de Maiz (para Caballo)
Mais Pflanzmaschinen (für Pferdebetrieb)

Bradley Mfg. Co., David, Bradley, Ill.	1
Moline Plow Co., Moline, Ill.	6

Corn Shellers (Hand)
Mais (Egrenoirs de, à main)
Descascaradoras de Maiz (de Mano)
Mais Pflanzmaschinen (für Handbetrieb)

Marseilles Mfg. Co., Marseilles, Ill.	4
Patch, A. H., Clarksville, Tenn.	5
Sprout, Waldron & Co., Muncy, Pa.	3
Standard Harrow Co., Utica, N. Y.	3
U. S. Wind Engine and Pump Co., Batavia, Ill.	31

Corn Shellers (Power)
Mais (**Egrenoirs de**), á énergie mecanique
Descascaradoras de Maiz (para Fuerza mecánica)
Mais Pflanzmaschinen für Pferdebetrieb)

Marseilles Mfg. Co., Marseilles, Ill.	4
Patch, A. H., Clarksville, Tenn.	5
Sprout, Waldron & Co., Muncy, Pa.	3
Standard Harrow Co., Utica, N. Y.	3

Cotton Planters
Coton (Semoirs de)
Sembradoras de Algodón
Baumwoll Pflanzmaschinen

Ohio Cultivator Co., The, Bellevue, Ohio	31

Cultivating Machinery (Hand and Garden)
Culture du sol (Intruments pour la), á main et pour le jardin
Maquinaria Cultivadora (de Mano y para Huerta)
Garten Pflüge (für Handbetrieb)

Deere Plow Co., John, Moline, Ill.	36
Moline Plow Co., Moline, Ill.	6
Standard Harrow Co., Utica, N. Y.	3

Cultivating Machinery (Horse and Field)
Culture du sol (Instruments pour la), **à cheval** et pour le champ
Maqninaria Cultivadora (de Caballo y para el Campo)
Bodenkultur Geräte (für Pferdebetrieb)

Bradley Mfg. Co., David, Bradley, Ill.	1
Deere Plow Co., John, Moline, Ill.	36
Moline Plow Co., Moline, Ill.	6
Ohio Cultivator Co., The, Bellevue, Ohio	31
Standard Harrow Co., Utica, N. Y.	3

Engines and Boilers (Stationary)
Machines à vapeur et Chaudières (fixes)
Maquinas de Vapor y Calderas (Fijas)
Maschinen und Kessel (Stationär)

Leffel & Co., James, Springfield, Ohio	29

Engines (Traction and Portable)
Machines à vapeur (Pour la traction et transportables)
Máquinas (De Tracción y Portátiles)
Traktions- oder Zugmaschinen und Lokomobilen

Feed and Ensilage Cutters
Coupe-aliments, coupe-ensilage
Cortadora de Forraje y Ensilaje
Futter- und Grünfutter (**Ensilage**) **Schneidemaschinen**

Marseilles Mfg. Co., Marseilles, Ill.	4
Silver Mfg. Co., Salem Ohio	35

Feed Mills
Moulins pour aliments
Molinos de Frorraje ó Pienso
Futtermühlen

Sprout, Waldron & Co., Muncy, Pa.	3

Files (Letter and Card)
Systémes de classification (lettres et cartes)
Guarda-Cartas y Tarjetas
Skripturenordner (für Briefe und Karten)

Forgings (Carriage)
Pièces forgées (Voiture)
Forjaduras (para carruajes)
Schmiedereien (Kaleschen-)

Gardening Tools (Hand)
Jardinage (**Outils de**) à main
Herramientas de Hortelano (de Mano)
Gärtnerei Handwerkzeug

Grain Cleaning Machinery (Rice, Coffee, Grain, Etc.)
Grains (**Machines à nettoyer les**): **riz, café, grain,** etc.
Maquinaria pare Limpiar Granos (Arroz, Café, Granos, Etc.)
Getreide Reinigungsmaschinen (für Reis, Kaffee, Korn, u. s. w.)

Sprout, Waldron & Co., Muncy, Pa.	5

Grain Drills
Grains (**Semoirs de**)
Sembradoras de Granos
Drillmaschinen

Monitor Drill Co., Minneapolis, Minn.	35
Superior Drill Co., Springfield, Ohio	5

Grain Grinding Mills
Grains (**Moulins à moudre les**)
Molinos para Granos
Schrotmühlen

Flint & Walling Mfg. Co., Kendallville, Ind.	3
Kelly Co., The O. S., Springfield, Ohio	36
Marseilles Mfg. Co., Marseilles, Ill.	4
Sprout, Waldron & Co., Muncy, Pa.	3
U. S. Wind Engine and Pump Co., Batavia, Ill.	31

Hand Carts (Push)
Charrettes à bras
Carretillas de Mano (de Empuje)
Hand-Schiebekarren

Bradley Mfg. Co., David, Bradley, Ill.	1
Deming Co., The, Salem, Ohio	35
Lansing Wheelbarrow Co., Lansing, Mich.	29

Hand Tools (Shovels, Rakes, Hoes, Scythes, Forks, Etc.)
Outils à main (Pelles, râteaux, houes, faux, fourches, etc.)
Herramientas de Mano (Palas, Rastrillos, Azadones, Guadañas. Horquillas, etc.)
Handwerkzeug (Schaufeln, Rechen, Haken, Sensen, Gabeln, u. s. w.

Harrows (Disc, Spring-Tooth and Spike-Tooth)
Herses (à disques, à dents élastiques, à dents droites)
Mielgas ó Rastrillos (de Disco, con Dientes de Resorte y Otros)
Eggen (mit Scheiben-, Federzahn- und Speichenzahn-Vorrichtung)

Bradley Mfg. Co., David, Bradley, Ill.	1
Bucher & Gibbs Plow Co., Canton, Ohio	2
Collins Plow Co., Quincy, Ill.	29
Deere Plow Co., John, Moline, Ill.	36
Moline Plow Co., Moline, Ill.	6
Ohio Cultivator Co., The, Bellevue, Ohio	31
Standard Harrow Co., Utica, N. Y.	3

Hay Loaders
Foin (**Chargeuses de**)
Cargadoras de Heno
Heu Auflader

Marseilles Mfg. Co., Marseilles, Ill.	4

Hay Presses
Foin (**Presses à**)
Prensas para Heno
Heu Pressen

Bradley Mfg. Co., David, Bradley, Ill.	1
Collins Plow Co., Quincy, Ill.	29
Ertel Co., George, Quincy, Ill.	6
Ohio Cultivator Co., The, Bellevue, Ohio	31
Standard Harrow Co., Utica, N. Y.	3

Hay Rakes
Foin (**Râteaux à**)
Rastros para Heno
Heu Rechen

Bradley Mfg. Co., David, Bradley, Ill.	1
Moline Plow Co., Moline, Ill.	6

Hay Tools (For Handling Hay)
Foin (**Outils** pour la manipulation du)
Herramientas para Heno (para Manipular el **Heno**)
Heubearbeitungs-Apparate und Werkzeuge

Myers, F. E. & Bro., Ashland, Ohio	2
U. S. Wind Engine and Pump Co., Batavia, Ill.	31

Hods (Steel and Wood)
Auges (Acier et bois)
Artesas de Cargar (de Acero y de Madera)
Tünchkübel (Mörteltröge, aus Stahl und Holz)

Lansing Wheelbarrow Co., Lansing, Mich.	29

Implement Parts (Rake, Teeth, Knife Sections, Etc.)
Pièces de rechange (Dents de râteaux, conteaux de faucheuses, etc.)
Partes de Instrumentos (Dientes de Rastrillo, Secciones de Cuchilla, Etc.)
Theile von Landwirthschaftsgeräthen (Rechenzähne, Messertheile, u. s. w.)

Incubators
Conveuses artificielles
Incubadoras
Brutmaschinen (Inkubatoren)

Ertel Co., George, Quincy, Ill.	6

Lawn Mowers
Tondeuses de gazon
Segadoras ó Cortadoras de Césped
Rasen Mähmaschinen

Clipper Lawn Mower Co., Dixon, Ill	5
Chadborn & Coldwell Mfg. Co., Newburgh, N. Y	1

Leather (Imitation)
Leder (Imitation)
Cuero (Imitación)
Cuir (Imitation)

Fairfield Rubber Co., The, Fairfield, Conn.	5

Machine Tools
Machines-outils
Herramientas Mecánicas
Maschinen-Werkzeug

Silver Mfg. Co., Salem, Ohio	35

Mowers.
Faucheuses.
Segadoras.
Mähmaschinen.

Mills (Corn and Hominy)
Moulins (pour maïs et bouilie)
Molinos (para Moler Maiz Fino y Grueso)
Mühlen (für Getreide und indianisches Reis, Hominy)

Sprout, Waldron & Co., Muncy, Pa.	3
Standard Harrow Co., Utica, N. Y.	3

Oil Cloth
Toile Cirée
Wachstuch

Plows (Walking, Riding and Disc)
Charrues (ordinaires, à siège, à disques)
Arados (de Caminar, de Montar y de Disco)
Pflüge (Geh-, Fahr- und Scheibenpflüge)

Bradley Mfg. Co., David, Bradley, Ill.	1
Bucher & Gibbs Plow Co., Canton, Ohio	2
Collins Plow Co., Quincy, Ill.	29
Deere Plow Co., John, Moline, Ill.	36
Moline Plow Co., Moline, Ill.	6
Ohio Cultivator Co., The, Bellevue, Ohio	31
South Bend Chilled Plow Works, South Bend, Ind.	1
Standard Harrow Co., Utica, N. Y.	3

Potato Machinery
Pommes de terre (Machines pour la culture des)
Maquinaria para Patatas
Kartoffel-Maschinen

Bradley Mfg. Co., David, Bradley, Ill.	1
Moline Plow Co., Moline, Ill.	6
Standard Harrow Co., Utica, N. Y.	3

Pumps, Hand and Power (Lift, Force and Spray)
Pompes, à main, et à énergie mécanique (Pompes aspirantes, foulantes, pulvérisatrices)
Bompas de Mano y para Fuerza Mecánica (Aspirantes, de Forzar y de Rociar)
Pumpen, Hand- und Kraftpumpen (Hebe-, Druck- und Besprengungs-Pumpen)

Deming Co., The, Salem, Ohio	35
Flint & Walling Mfg. Co., Kendallville, Ind.	3
Myers, F. E. & Bro., Ashland, Ohio	2
U. S. Wind Engine and Pump Co., Batavia, Ill.	31

Reapers.
Moissonneuses.
Cosechadoras
Getreide-Mähmaschinen.

Rollers (Field or Road)
Rouleaux (pour champs et pour routes)
Rodillos (para Campo y para Caminos)
Feld- und Weg-Walzen

Bradley Mfg. Co., David, Bradley, Ill.	1
Lansing Wheelbarrow Co., Lansing, Mich.	29
Ohio Cultivator Co., The, Bellevue, Ohio	31
Standard Harrow Co., Utica, N. Y.	3

Rubber Goods
Articles de caoutchouc
Articulos de Caucho
Gummiwaaren

Rubber Tires
Gummireifen
Bandes de roues en caoutchouc
Llantas de Caucho para Ruedas

Morgan & Wright, Chicago, Ill.	1

Scrapers (Road)
Ratissoires (pour routes)
Dragas (para Caminos)
Strassen Scharr-Maschinen (Strassen-Ebener)

Standard Harrow Co., Utica, N. Y.	3

Seeders, Broadcast (Grain and Grass)
Semoirs pour semer à la volée (Grain et graminèes)
Máquinas de Sembrar Semillas al Vuelo (**Granos** y Semilla de Yerbas)
Breitsämaschinen (für Getreide und Gras)

Sharpeners and Grinders
Machines à remoudre et à aiguiser
Afiladoras y Amoladoras
Schärfe- und Schleif-Apparate

Sleighs
Traineaux
Trineos
Schlitten

Dapson & Wolf, Oneida, N. Y.	3

Sprayers and Nozzles
Instruments d'arrosage
Rociadoras y Boquereles
Besprengungs-Spritzen und Uebernasen

Deming Co., The, Salem, Ohio	35
Flint & Walling Mfg. Co., Kendallville, Ind.	3
Myers, F. E. & Bro., Ashland, Ohio	2
Standard Harrow Co., Utica, N. Y.	3

Stalk Cutters
Coupe-chaume
Cortadoras de Tallos
Stengel Abschneider

Street Sprinklers
Arrosage des rues (Tonneaux pour l')
Regadoras de Calle
Strassen Bespreng-Wagen

Studebaker Bros. Mfg. Co., South Bend, Ind.	36

Sugar Cultivating Implements
Sucre (**Instruments pour la culture de la canne à**)
Instrumentos para el Cultivo Azucarero
Zucker-Anbau Geräthe

Threshing Machinery
Machines à battre
Maquinaria de Trillar
Dresch Maschinen

Tire Setters
Machines à fixer les bandes de roues
Maquinas de Poner Llantas
Maschinen zum Aufsetzen von Gummireifen

Standard Tire Setter Co., Keokuk, Iowa	36

Tread Powers (Horse, Dog, Sheep, Etc.)
Machines à utiliser l'énergie de la marche (Cheval, Chien, Mouton, etc.)
Motores de Pisada (para Caballo, Perro, **Carnero**, etc.)
Kraft-Tretmaschinen (Pferde, Hunde, **Schafe**, u. s. w)

Trucks (Hand Warehouse)
Trucs (Emmagasinage à bras)
Carretillas de Mano para almacén
Transport Handwagen (für Waarenhäuser)

Lansing Wheelbarrow Co. Lansing, Mich.	29

Wagons (Business)
Charettes (d'affaires)
Carros (para negocios)
Wägen (Geschäftswägen)

Wagons and Buck-Wagons
Charrettes et charrettes à lessive
Carretones y Carretas
Wägen und Bockwägen

Ohio Valley Wagon Co., The, Marietta, Ohio . . . . .

Wagons and Carts (Farm)
Wagonnets et charrettes (Ferme)
Carretones y Carretas (para Hacienda)
Landwirthschaftliche Wagen und Karren

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Weeders
Sarcloirs mécaniques
Desyerbadoras
Jäte Maschinen

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Well Tools and Drilling Machinery
Outils pour puits et machines à forer
Instrumentos para Abrir Pozos y Maquinaria para Horadar
Brunnen-Werkzeug und Bohr-Maschinen

Flint & Walling Mfg. Co., Kendallville, Ind.	3

Wheelbarrows
Brouettes
Carretillas
Schiebekarren

Lansing Wheelbarrow Co., Lansing, Mich. . . .	29

Wheels (Carriage)
Roues (Voiture)
Ruedas (Carruaje)
Räder (Kaleschen und Wagen)

Wheels and Wheel Materials
Roues et articles pour roues
Ruedas y Materiales para Ruedas
Räder und Rädermaterialien

Windmills (Towers and Tanks)
Moulins à vent (Tours et réservoirs)
Molinos de Viento (Torres y Tanques)
Windmühlen (Thurm- und Bütten)

Flint & Walling Mfg. Co., Kendallville, Ind.	3
Marseilles Mfg. Co., Marseilles, Ill. . . .	4
U. S. Wind Engine and Pump Co., Batavia, Ill	31

Wood Sawing Machinery
Bois (Machines à scierle)
Maquinaria para Aserar Madera
Holzsäge-Maschinen

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Standard Tire Setter Co., Keokuk, Iowa	35
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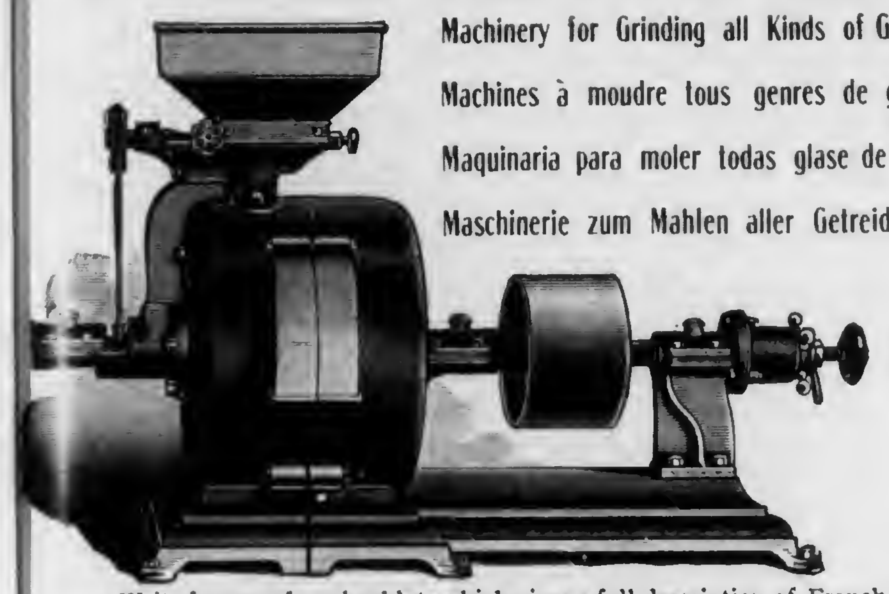


Machinery for Grinding all Kinds of Grain
Machines à moudre tous genres de grains
Maquinaria para moler todas glase de granos
Maschinerie zum Mahlen aller Getreidesorten

Write for one of our booklets which gives a full description of French Burr and Attrition, Feed and Meal Mills, Cotton Seed and Linseed Oil Cake Mills, Emery Rock Mills, Cotton, Ear and Ore Crushers, Magnetic Separators, Corn Shellers, etc.

Ecrivez pour un pamphlet contenant description détaillée de moulins à meules de France et à frottement, de moulins pour grains de cotton et de tourteaux de lin, de moulins à pierre d'émeri, de broyeurs d'épis et de minérais, de moulins magnétiques, d'écosseurs, etc.

Escríbasenos pidiendo uno de nuestros libritos, en que se da una completa descripción de nuestros Molinos de Piedra Francesa y de Roce, para Pienso y para Harina, Molinos de Semillas de Algodón, y para moler Tortas de Aceite de Semillas de Linaza, Molinos para Roca de Esmeril, Trituradoras de Algodón, Mazorcas y Minerales, Separedoras Magnéticas, Desgranadoras de Maiz, etc.

Man verlange eines unserer Büchlein, das volle Beschreibung unserer französischen Mahlsteine und Reibevorrichtung enthält, wie auch aller Futter-Vorrichtungen, Mehl-Mühlen, Baumwollensaamen- und Leinölsaamen Kuchen-Mühlen, Schmirgel-Bergmühlen, Baumwollen-, Aehren- und Erzzerstückelungs-Maschinen, magnetische Separatoren, Korn-Enthülsemaschinen, u. s. w.

SPROUT, WALDRON & CO.

Drawer M. MUNCY, PA., U. S. A.

The Standard Harrow Co.

UTICA, N. Y., U. S. A.

ABERDEEN, SR. SPRING-TOOTH HARROW

Unequalled Strength
No Clogging
Reversible Points on Teeth

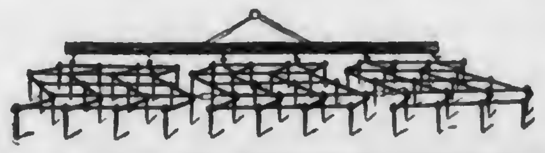
THE STANDARD LINE includes one and two-section Spring-Tooth Harrows and all styles and sizes of Spike-tooth and Disc Harrows, Cultivating Implements, Potato Harvesters, Potato Sprayers, etc., and is one of the most favorably known lines in the leading agricultural countries.

We guarantee prompt service for all export orders. Our factory is only five hours' ride from New York City.

WRITE IN YOUR OWN LANGUAGE FOR CATALOGUE F

ZIG ZAG STEEL SPIKE-TOOTH HARROW

20-Tooth Sections
½-inch Teeth

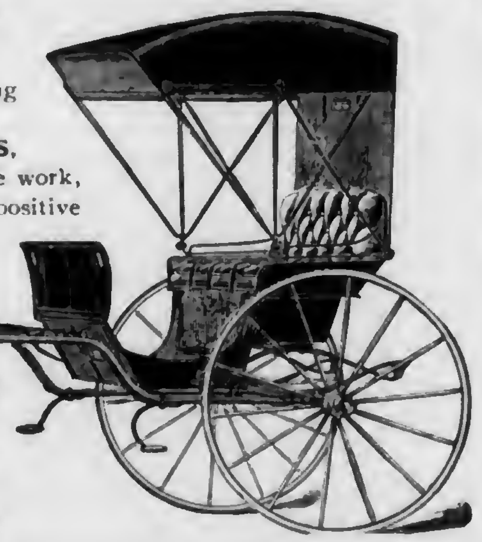


EASY RIDING

This two-wheeler is our leading specialty for export.

We equip it with RUBBER TIRES, if desired, put on with two wires. The work, like the job itself, is sold under our positive guarantee.

LET US SEND YOU THE PRICES



Dapson & Wolf
ONEIDA, NEW YORK, U. S. A.
WHOLESALE MAKERS OF
FINE CARRIAGES

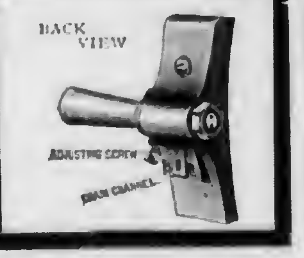
POTTER'S SPRING BRAKE BLOCKS . . .

Very substantial. Over 25,000 sets in use throughout the United States. We make them for Steel Tires, and they are especially adapted for Rubber Tires.

Will Not Injure Rubber Tire a Particle

We solicit your correspondence

The Morgan Potter Company
FISHKILL-ON-HUDSON, N. Y., U. S. A.



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For many years we have been exporting Windmills and know what is needed to meet all requirements and please our foreign friends. We understand how these goods should be packed for safe delivery, and the packing receives our utmost careful attention. With all the required parts at hand and properly fitted it facilitates the assembling and erecting of the Mills.

We build **Hand and Windmill Pumps** of various designs, all sizes of **Pine, Cypress and Galvanized Steel Tanks, Galvanized Steel Towers** any height. **Power Windmills** for grinding feed and running light machinery and **Steel Substructures** all heights, to support Tanks of any capacity.

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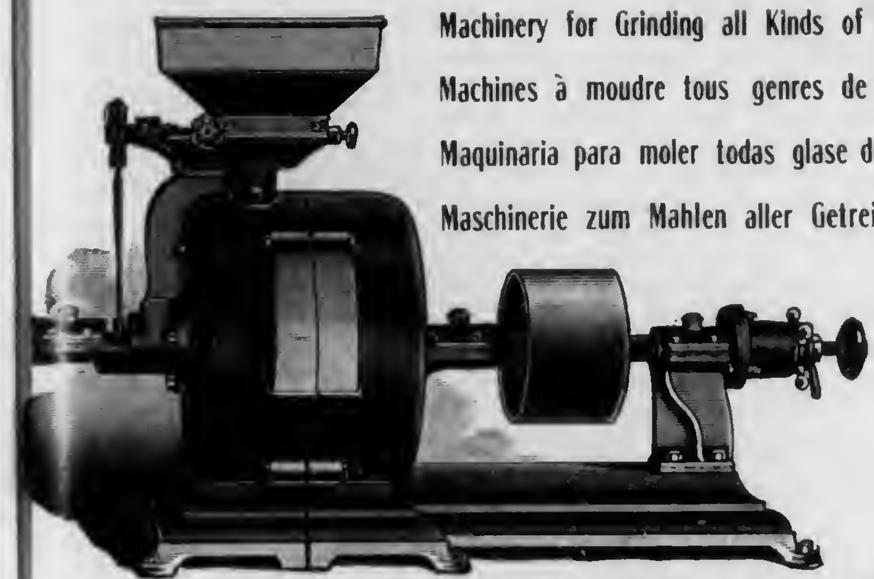

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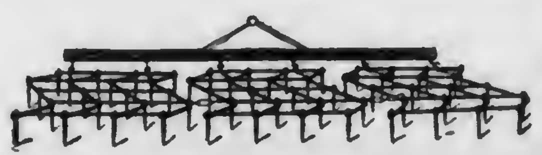

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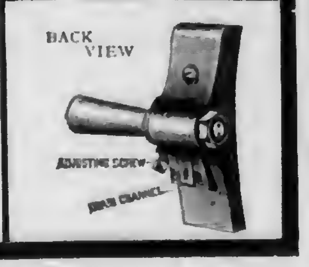
BACK VIEW



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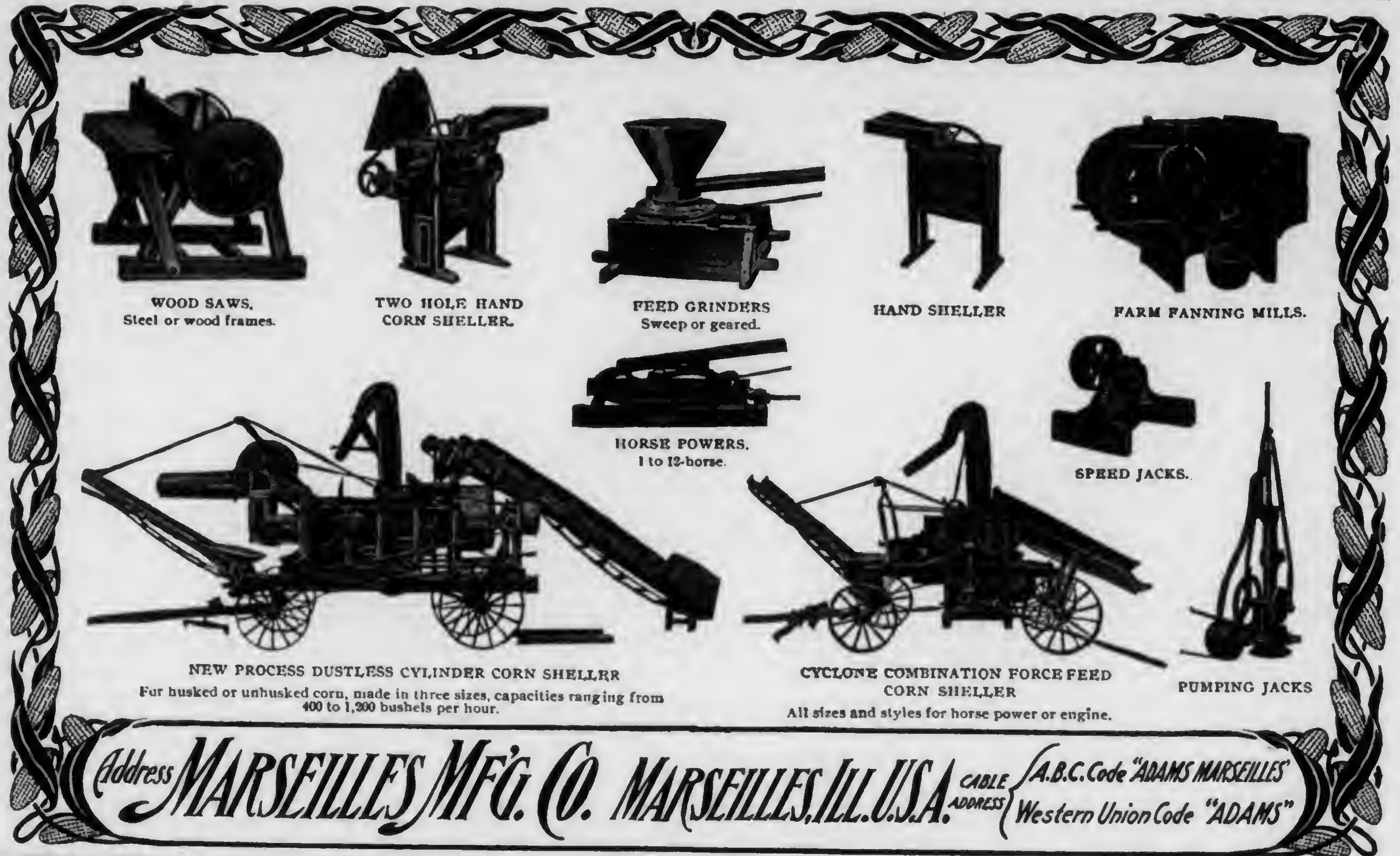

WOOD SAWS.
Steel or wood frames.

TWO HOLE HAND CORN SHELLER.

FEED GRINDERS
Sweep or geared.

HAND SHELLER

FARM FANNING MILLS.

HORSE POWERS.
1 to 12-horse.

SPEED JACKS.

NEW PROCESS DUSTLESS CYLINDER CORN SHELLER
For husked or unhusked corn, made in three sizes, capacities ranging from 400 to 1,200 bushels per hour.

CYCLONE COMBINATION FORCE FEED CORN SHELLER
All sizes and styles for horse power or engine.

PUMPING JACKS

Address MARSEILLES MF'G. CO. MARSEILLES, ILL. U.S.A.
CABLE ADDRESS
A.B.C. Code "ADAMS MARSEILLES"
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Extend your trade beyond the seas

AMERICAN manufactures are not only in demand, but in many cases are given the preference in foreign countries. Especially is this true of Agricultural Machinery, Farm Supplies, Vehicles and Hardware Specialties. If you are manufacturing any of these goods voice it abroad and make the world your field. You can do it just as easily as you can secure home trade if you'll talk through the

Export Implement Age

IT REACHES ALL FOREIGN COUNTRIES
WRITE US FOR ADVERTISING RATES

Superior Grain Drills

Semoirs Supérieurs de Grains. Manufacturés en une grande variété de dimensions pour Grains seulement on pour Grains et Fertilisants mélangés, avec Disque, Houe et Soc creusant les sillons. Nous manufacturons des modèles spéciaux de Semoirs de Grains pour l'Europe, l'Australie, l'Amerique du Sud et le Sud de l'Afrique. Demandez les Catalogues descriptifs illustres.

Sembradoras Superiores de Granos. Se fabrican de muchos tamaños de sembrar Granos sóla ó combinada con Fertilizador, con surcadores de Disco, de Azadón ó Zapatillas. Nosotros fabricamos Sembradoras de tipos especiales para Europa, Australia, Sud América y el Africa del Sur. Envíese por un Catálogo descriptivo ilustrado.

"Superior" Getreiderillen. Wird in vielseitiger Auswahl von Grössen hergestellt: Einfache Getreiderillen und Kombinationen von Getreide und Pflugrillen mit Scheiben, Hauen und Schuh-Lockerungs Vorrichtungen. Wir fabriziren besondere Arten von Getreiderillen für Europa, Australien, Süd-Amerika und Süd-Afrika. Man verlange illustrirte beschreibende Kataloge.

We manufacture special types of Grain Drills for Europe, Australia, South America and South Africa

Made in a large variety of sizes in Plain Grain and combined Grain and Fertilizer, with Disc, Hoe and Shoe furrow openers

THE SUPERIOR DRILL CO., Springfield, O., U.S.A.

THE FAIRFIELD RUBBER CO.

Manufacturers of

Carriage Cloth, Imitation Leather, Etc.

FAIRFIELD, CONN., U. S. A.

We believe you will find our cloths more desirable fabrics than have been presented for your consideration.

Not only do we offer our lines as superior to any, but some are special with us.

We warrant all our goods in every manner, and in all climates.

All we ask is a trial of our productions, as we know the result will be in our favor.

Our many years' connection with the foreign trade places us in a position to know fully as to their wants, and the large orders we receive from that field convinces us that the high standard at which we have kept our goods is appreciated. We refer with pleasure to any leading Export house in New York as to the merit of our cloths.

Send for quotations through any Export house, or write us direct.

When ordering goods in our line, ask for goods made by

The Fairfield Rubber Co.

CLIPPER LAWN MOWER CO. DIXON ILLINOIS

THE MOWER that will **kill all the Weeds in your Lawns.** If you keep the weeds cut so they do not go to seed, and cut your grass without breaking the small feeders of roots, the grass will become thick and the weeds will disappear.

THE CLIPPER WILL DO IT

Ask Your Dealer for Them

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Black Hawk Mill

Wgt 17 Lbs.

GRINDS
Corn, Wheat, Rye, Rice, Coffee, Spices, Etc.

Instantly Adjusted to Grind Fine or Coarse.

WILL DO GOOD WORK AND LAST

Grinding Plates are of the Hardest and Strongest Metals. Can be replaced at slight cost.

Packed in barrels of 12 each. Gross weight, 240 lbs.; net, 204 lbs. Measurement 6¼ cubic feet.

***A. H. PATCH,* Sole Maker,**
Clarksville, Tenn., U. S. A.

Order through any Reliable Commission House.

PATCH'S PATENT
Black Hawk Corn Sheller

Wgt. 15 lbs.

"BLACK HAWK" CORN SHELLER A.H.PATCH CLARKSVILLE

SHELLS FAST.
SHELLS CLEAN.
SHELLS EASILY.

Beware of Imitations

Capacity 8 to 12 bushels ear corn per hour.

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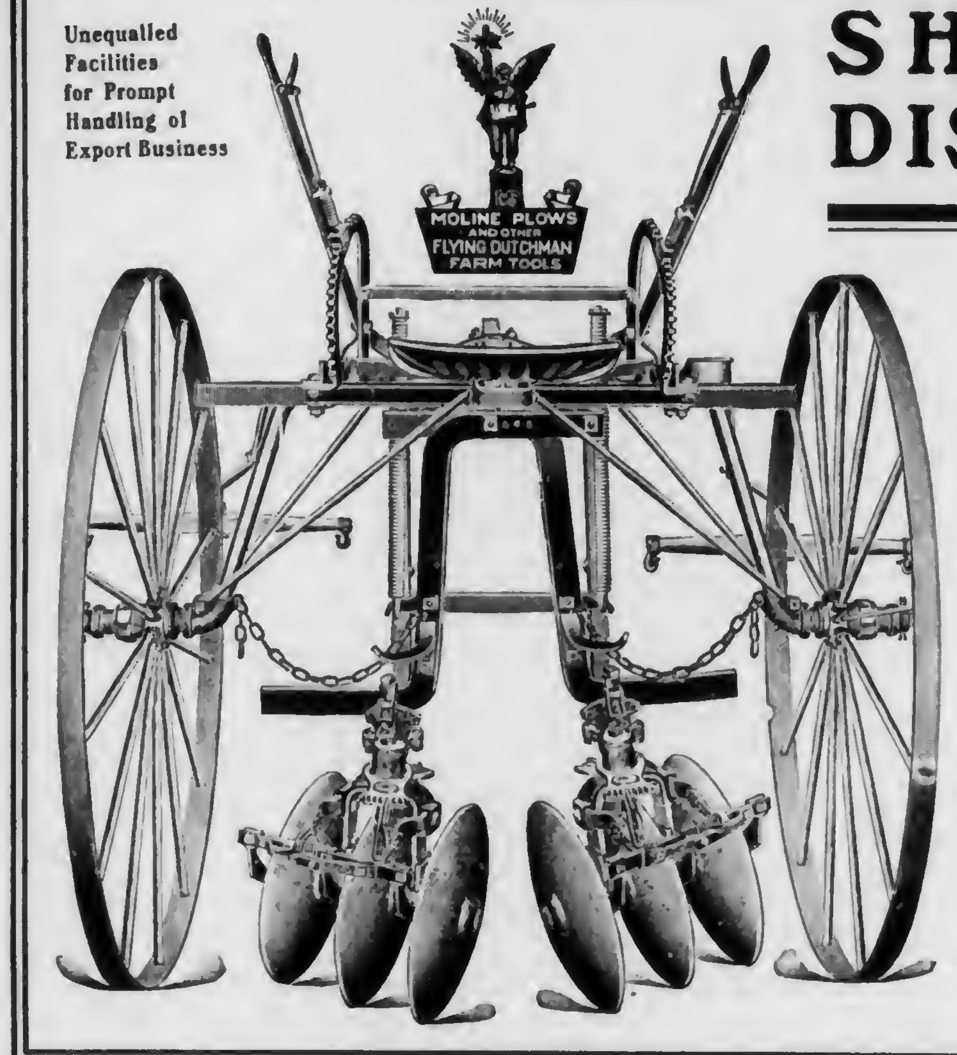

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37 Jahre ununterbrochener Fabrikation von Heupressen, Strohpressen, Wolle- und Baumwollenpressen, wie auch Maisfutter-Pressen, sollte uns wahrlich in den Stand gesetzt haben, Experten dieser Branche geworden zu sein; wir beanspruchen deshalb für unsere Pressen, dass sie die einfachsten in Konstruktion sind, beim Gespann den leichtesten Zug haben und zum Emballiren die vorzüglichsten Dienste leisten. Unsere Pressen sind im Stande 10 bis 18 "Tonnengehalt" Heu und 10 bis 15 "Tonnengehalt" Stroh täglich zu emballiren.

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We make a line of both Full Circle and Half Circle Presses.
Prices, f. o. b. cars New York City, on our Gem Full Circle Balers, properly crated for export:

	Net Weight.	Gross Weight.	Space	Prices.
14 x 18 Baler	2,650 (1,457 Kilos)	3,700	115 cubic feet	$215.25 (£44.16.10)
16 x 18 Baler	2,775 (1,526 Kilos)	3,800	171 cubic feet	218.00 (£45. 8. 4)
17 x 22 Baler	2,975 (1,636 Kilos)	4,000	120 cubic feet	221.50 (£46. 3. 0)

Notre presse "Gem" à cercle entier

Nous fabriquons un assortiment de presses à demi-cercle et à cercle entier.
Prix de nos presses "Gem" à cercle entier, mises en wagon à New York et convenablement emballées pour l'exportation:

	Poids net.	Poids brut.	Espace.	Prix.
Presse 14 x 18	2,650 (1,457 kilos)	3,700	115 pieds cubes	$215.25 (£44.16.10)
Presse 16 x 18	2,775 (1,526 kilos)	3,800	171 pieds cubes	218.00 (£45. 8. 4)
Presse 17 x 22	2,975 (1,636 kilos)	4,000	120 pieds cubes	221.50 (£46. 3. 0)

Nuestra Prensa "Gem" Circulo Entero

Nosotros fabricamos un surtido completo de prensas tanto de medio circulo como de circulo entero. Los precios de embarque de la Prensa "Gem" son franco á bordo de los carros hasta New York, y se empaquetan con seguridad para exportarlas.

	Peso Bruto.	Neto.	Espacio.	Precio.
Prensa 14 x 18	2,650 (1,457 Kilos)	3,700	115 piés cúbicos	$215.25 (£44.16.10)
Prensa 16 x 18	2,775 (1,526 Kilos)	3,800	171 piés cúbicos	218.00 (£45. 8. 4)
Prensa 17 x 22	2,975 (1,636 Kilos)	4,000	120 piés cúbicos	221.50 (£46. 3. 0)

Unsere Voll-Zirkel "Gem" Presse.

Wir fabriziren ein Assortiment von Voll- und Halbzirkel-Pressen.
Preise unserer Vollzirkel Emballage-Pressen, frei Board New York, fertig für den Exportversand verpackt:

	Nettogewicht.	Bruttogewicht.	Rauminhalt.	Preise.
14 x 18 Presse	2,650 (1,457 Kilo)	3,700	115 Kubikfuss	$215.25 (£44.16.10)
16 x 18 Presse	2,775 (1,526 Kilo)	3,800	171 Kubikfuss	218.00 (£45. 8. 4)
17 x 22 Presse	2,975 (1,636 Kilo)	4,000	120 Kubikfuss	221.50 (£46. 3. 0)

GEO. ERTEL CO. - 592 Kentucky Street, Quincy, Ill., U. S. A.

EXPORT IMPLEMENT AGE

Vol. XIII. Philadelphia, Pa., U. S. A., February, 1906. No. 5.

The Evolution in Agricultural Machinery

The evolution—or rather, the revolution—in agricultural machinery has all taken place within the last century. A hundred years ago, farm implements were almost as primitive as they were a thousand years ago. The cradle scythe, for instance, is only a little more than a century old, and the cast iron plow was first used even later. Now we have steam plows, combined harvesters and threshers and automowers; and though these are commonly used on the huge farms of the West where most of our grain is grown, their employment is so recent that only a small part of the population have ever seen them at work. Yet they are changing our life in all its phases—freeing the farmer from the monotony of hand labor, placing us in the front rank of exporting, and more than that, they are altering the immortal conception of agriculture, and the pastoral and idyllic associations that have gathered about it since the days of Abraham. In no other line of invention has progress been more marked and more rapid. One of the most striking of the exhibits at the St. Louis Exposition was the wooden plow used by Daniel Webster on his father's farm, beside a modern eight-gang steam plow.

All the great crops are now planted, and all except cotton are gathered, by machinery. The plowman no longer trudges slowly and wearily back and forth across his field. He rides a sulky plow with a spring seat. There are special plows for every need; turf plows, stubble plows, subsoil plows, plows for heavy work, plows for light work, and gang plows turning three furrows at once. Plowing by steam is a common practice on the great wheat ranches of the Pacific Coast. On the tule lands of California, a sixty-horse-power traction engine drawing twenty-one feet of disk plows will break the ground to a depth of ten inches at the rate of sixty acres a day. With moldboard plows designed especially for this work, a strip twenty-eight feet wide can be broken. This means, in other words, that a man and a pair of horses with a single mold-board plow would have to cross a field twenty-eight times to do the same work that the traction engine does by one trip of its plows. A farmer of the Central West, who uses a small traction engine and a gang of four fourteen-inch plows, says that it costs him from 50 to 52 cents per acre to break his ground. He considers steam economical.

The plowing done, the manure spreader replaces the hand-fork and its backache. While the farmer with a pair of horses drives back and forth across his fields, the fertilizer is mechanically spread evenly over the land from the rear of his wagon. Economy in fertilizer is effected by this method, because it is spread with greater evenness than is possible by hand, not to speak of the saving of toil.

The land made ready for the reception of the seed, machinery again takes the place of muscle. The sower goes forth to sow, but not as he once did, dropping seed into the soil, trudging backward and forward from dawn until twilight. The grain is broadcasted and drilled in by machinery, which at the same time registers the acreage sown. In like manner corn is drilled in, listed or planted in hills; potatoes are planted; and even cabbage, cauliflower and tobacco plants are set out by the aid of mechanical devices.

After the crop is planted, the weeds promptly appear. They once meant the hoe, blistered hands, tired backs, and a weary battle. To-day the farmer has his choice of a great variety of helpful, labor-saving machines.

But it is when we come to the harvest that we find the greatest marvels of mechanical ingenuity. Drawn by horses, the self-binder cuts an eight-foot swath across the field of ripened wheat, gathering it and automatically binding it in bundles at the same time; and if a header be preferred, the heads of the standing grain are taken off cleanly and poured in a steady stream through a chute into the wagon that is driven beside it. The most spectacular scene of agricultural progress is the combined harvester and thresher, which is used on the great grain seas of California. From horizon to horizon stretch the ripened fields. Where are the harvesters to garner such a crop? Measured by the methods of small farms, the problem of harvesting seems like emptying the Great Lakes with a dipper. But the steam harvester moves steadily forward into it. The grain falls in a great swath on one side, melting away before the advance of the machine. On the other side, with the same regularity, drop sacks of grain ready for the miller. The ranchman following with his team picks up a sack filled with threshed and winnowed wheat from the very spot where but five minutes before the wheat stalks stood in the sunshine.

The combined harvester and thresher is at its best on level plains, but special side hill machines for rolling country have been perfected so that they can follow wherever the gang plow leads. Horse or mule power is used in many places instead of steam, thirty or more animals being employed. Such a machine, with a twenty-two foot header, can cut, thresh and sack forty acres of wheat in a day. It requires a crew of but four men—a driver, a header-runner, a separator tender and a sack-sewer. The cost of cutting and threshing is usually $1.25 per acre.

There has been for several years in operation in California the largest combined harvester in the world. It consists of a traction engine capable of hauling 75 tons, which takes the place of 60 horses; a mower which cuts a 36-foot swath, and a complete threshing machine. The drive wheels of the monster are eight feet in diameter, with tires 48 inches wide on which are ridges an inch and a half high. It averages three and a half miles an hour in good grain. The thresher has a capacity of 100 acres a day. Eight men are employed on it. The huge machine will work equally well on level or hilly country, having sufficient power to take a 20 per cent. grade without difficulty. It is 66 feet long, half as wide, and weighs more than 100 tons. Oil is used as fuel.

The amount of human labor now required to produce a bushel of wheat from beginning to end is on an average only ten minutes, and the cost of such labor is three and one-third cents. When men now living were boys, a bushel of wheat represented three hours and three minutes of labor, at a cost of 18 cents Just before the Civil War, a bushel of corn represented more than four and one-half hours of human labor at a cost of 35 and a fraction cents; to-day, 41 minutes of labor produce the same amount for a little more than ten cents. The potential saving in money, to say nothing of time and strength, thus becomes enormous.

In the great corn belt, the corn binder does what the mower does in the hay field. It cuts the corn, binds it in bundles, and deposits five of them in a spot as fast as a man can shock them up. A still further advance is a corn shocker which cuts the standing corn, and by a vertical rotary reel and a revolving table, forms a perfect shock, which, when bound, is lifted by a crane and deposited where it is wanted. One man and a pair of horses can thus do the work of two or more field hands. By the latest advance in agricultural mechanics, corn is picked and husked by a single operation. Husking and shredding have long been so combined. The corn in the stalk is fed into the husking machine from the wagon. By tapering rolls, the ears are snapped from the stalks and then husked. The stalks are shredded and with the husks dropped on an inclined sieve, which takes out such of the corn as may have been shelled. The fodder passes on to a fan and is blown through a tube up into the mow. The machine does this work at the rate of thirty bushels of husked corn an hour. Not only is there a saving in time and labor by using this apparatus, but there is also the addition of a new food value to the product. This we owe to the shredder. The once nearly useless stalks are made available as a fodder relished by the cattle. And in the last step before the corn reaches the miller, again we find the use of a machine. The steam sheller will shell a bushel of corn a minute, while in the old way the labor of one man was required for one hundred times as long. It has been estimated that it would require the entire population of the United States for 100 days, to shell by the old hand method the annual crop of this country.

Almost equal progress has been made in

clover hullers, bean separators, etc. Every one is familiar with the mower, the tedder and the horse rake used for the hay crop. To these have been added the hay gatherer and stacker drawn by horses, and a press operated by horse-power. To harvest and press a ton of hay by hand required thirty-five and a half hours of labor; with modern machinery it takes eleven hours and a half. The greatest saving is in the cutting and curing of the crop, which by hand demands eleven hours, and by machinery one hour and thirty-nine minutes.

Machinery plays a hardly smaller part in the lesser industries of the farm. The hen has seen herself outdone by the incubator. The cream separator has replaced the skimming pans of the dairy; the windmill pumps water for the cows. Instead of the whisk broom and pail of solution, spraying machines drawn by horses take care of the potato bugs. A shearing machine has been used with success on the big western sheep ranches. Even the cow may not escape, for milking machinery seems likely to come into favor.

In the incidental work of the farm, machinery has proven an important factor. The gasoline engine furnishes power in a most available form. It is rapidly supplanting hand labor in many ways. It grinds bone for the poultry and feed for stock. It saws the year's supply of wood. It has been used of late to drive mowing machines. By a small steering wheel in front, the machine is made to run just outside the standing grass, and its work is most effective. Auto-mowers are used in many large city parks. The soft earth of the farm has thus far prevented the extensive use of automobile machinery in the fields, owing to its weight; but in districts where good roads prevail, it is already a factor in the marketing of crops, notably in certain fruit sections.

It is estimated that the amount of money invested in the manufacture of agricultural machinery in this country is upwards of $200,000,000. At the outbreak of the Civil War, the industry required but little more than $3,500,000. The cost of material yearly consumed in the manufacture of farm implements is more than $40,000,000. The value of the annual products is considerably more than $100,000,000. The United States stands at the head of all countries in agricultural machinery, and Illinois leads all the States in the manufacture of farm implements, harvesting machinery especially. In Chicago alone is invested more than 20 per cent. of the total capital in this industry for the United States. Chicago builds more of the costly and complicated machines, such as the combined harvesters, binders and mowers, than all the rest of the country. The great crop-producing States are in many cases among the smallest producers of the tools which has given them their pre-eminence.

Machinery has revolutionized Western agriculture in one way, and Eastern agriculture in another way. The northeastern States have developed intensive farming; the prairie States and the Pacific States extensive farming. New Jersey and Connecticut, for instance, have more farms than they had a decade ago, but less acreage. Although the farms are smaller than they were, the value of their products is half as much again. The farmers stopped growing the great crops when machinery was applied to the prairies, and took to trucking, making a far greater profit on less land. On the other hand, in the West during the same period, both the number of farms and the acreage increased. Machinery has thus brought a different result and to each a greater profit.

Only a generation ago, the prairie schooner went its slow way over the plains. The next scene in the story was the weary breaking ot the virgin soil with plows drawn by oxen. Then came—in the wonderful panorama of Western development—the smoke and whiz of the transcontinental railroad. Now the steam plow and the great harvester and binder complete the succession of typical scenes. Agriculture has been moved further forward among the great industries, in the lifetime of men now living, than it was before moved since man's earliest pastoral days. The revolution has come so fast that it has not even displaced labor; for farm laborers are less abundant than they were in the old days. The emancipation of the farmer from drudgery has come without bringing hardship to any class.

American agriculture acknowledges its debt to American inventive ingenuity and enterprise. It has solved the problem of successful competition with countries where labor is cheap. Foreigners recognize our superiority, and are hastening to buy our machines. France and Germany are our largest buyers, taking millions of dollars worth every year. All over the world our machines may be seen—on the steppes of Siberia, over the kopjes of South Africa, on Australian plateaus, on the table lands of Asia Minor. How the world's wide use of apparatus will, in time, affect the production and prices of the great staple crops, is a question for economists to discuss. It is certain that a force has been set in motion the result of which cannot be wholly foreseen.—*The Inventive Age.*

AGRICULTURE IN MEXICO

Speaking generally, the small farmer, that is to say, those owning under 160 acres, is, in Mexico, conspicuous by his absence. Real estate is held in immense tracts measured by the square miles, owned by families, estates and individuals and by them administered as a unit, although in some sections these properties are sub-rented on the shares among many tenants. With few exceptions all the tillable acreage is owned by Mexicans and Spaniards, although Americans, within the last few years, have appreciably increased their real estate holding and are devoting their energies to agriculture and stock raising, from both of which excellent returns are obtained on the capital invested.

In no branch of industry are the returns surer than in farming scientifically and systematically carried on. It is not intended that the deduction be drawn from this that all lands in Mexico are suitable for farming. Quite the contrary is the case, inasmuch as four-fifths of the entire Republic has never seen a plowshare and fully one-half is arid and untillable.

Great stretches of desert land extend from the Rio Grande toward the south for many miles, covered with stunted growths of cacti and sage brush. Other sections of equal area, owing to insufficient rainfall and the absence of water for irrigation, are as unfit for agricultural purposes as the Sahara, at least until the lands are redeemed by the construction of artificial waterways and reservoirs by government or private initiative.

As stated above, the total land area susceptible of cultivation either under irrigation or natural precipitation, will not exceed one-fourth of the total area of the Republic. Where water is available for irrigation, crops of all kinds common to the United States and Canada thrive and yield abundantly. In order of their relative importance, corn is the principal staple, closely followed by wheat, cotton, sugar cane, barley, flax and rice in the order named.

The annual corn crop of the Republic is estimated at 100,000,000 bushels, and of wheat, 14,000,000 bushels—being 7.2 and one bushel respectively per capita, reckoning the present population at 14,000,000.

The average corn crop is sufficient to meet the demand, it being observed, however, that the consumption of this staple shows no appreciable increase from year to year, nothwithstanding the rapid multiplication of industries such as breweries, distilleries and cornstarch factories which consume considerable quantities of the cereal.

This is accounted for by the rapid substitution among all classes, particularly the lower, of wheat for the corn tortilla, which was formerly the universal food of the peon class. Ten years ago flour was unknown among this class, and only within the recent past has the tendency been observed to not only mix a certain percentage of flour with the corn masa from which the tortilla is made, but to discard largely the latter and use flour extensively for making their tortillas.

Due also to the influx of a large foreign and transient population, the consumption of flour has increased during the last five years to a degree wholly disproportionate to the supply. That is to say, the production of wheat has not kept pace with the consumption of flour —the disparity being particularly noticeable in years like 1904 when the wheat crop fell considerably under the normal—the result being that flour reached an unprecedented price.—*Modern Miller.*

PUMPS AND HAY TOOLS

We believe that the largest factory in the whole world, devoted exclusively to the manufacture of pumps and hay tools, is that of F. E. Myers & Bro., Export Office, B-17-21, Produce Exchange, New York, N. Y., U. S. A. The plant contains a total of 350,000 square feet of floor space, and employs 500 men exclusively on pumps and hay tools. It is needless to say that this is a modern up-to-date plant with perfect equipment, and the company are prepared to fill orders of any size promptly and satisfactorily. All communications should be addressed to their Export Office, B-17-21, Produce Exchange, New York, N. Y., U. S. A.

DISTANCES IN VENEZUELA

In traveling in Venezuela it is not enough to ask how far distant a place is, but also how far up or down—in other words, what its altitude is— and no less important, what hills and valleys have to be crossed. Thus it is not only necessary to know that Caracas is six miles distant in a straight line from La Guayra, its seaport, but that it lies at an elevation of nearly half a mile above sea level, and that to reach it one has to cross a mountain wall rising far above the clouds, This, to the experienced traveler, means that he must prepare for an entirely different climate.

Unparalleled Industrial Record of the United States

All students of industrial conditions in the United States are agreed that the year 1905 was the most remarkable in the history of the country. Scores of industrial records were broken, and it mattered not in what direction the observer might turn, he would behold a picture of prosperity.

In manufacture, mining, agricultural, and in the development of transportation facilities the progress made was little less than phenomenal.

Mineral Industries

The mineral industries in the United States during 1905 paid to mine-owners and stockholders $150,000,000 in dividends, an immense increase having taken place in the output of the leading metals—gold, copper, silver, iron, ore, and coal.

Gold mining was immensely stimulated in 1905 by discoveries of new fields in Nevada, Colorado, California and Alaska. New systems of mining are now employed, and greater economy has resulted from the employment of modern machinery for the extraction of gold from waste "tailings" rock and low-grade ore, hitherto unprofitable to work out, which has, up to the last year, been thrown out upon the "dumps."

The year 1905 wrought a revolution in miners' methods. New machinery has expedited the working of the mines and made hitherto worthless properties valuable; while up-to-date, economical processes of assaying and refining have made it possible to utilize products of mines heretofore considered worthless. The result has been an immense increase in the country's metallic wealth.

The World's Flood of Gold

During the last year the United States produced an enormous amount of gold. It was a banner year for the gold mires of the United States and the Transvaal particularly, the two great gold countries of the world competing for supremacy.

The year's yield of gold in the world amounted to about $375,000,000 from all sources of supply. Of this amount the United States produced $90,000,000, and the Transvaal $100,000,000. Nevada and Alaska are the regions now promising an increased output, and California made considerable gains with newly discovered fields. In Alaska the whole territory now under placer operation is worked about only one hundred days in the year, but for this time the gold produced in the Nome region amounted to $4,000,000. The yield of the Tanana region was nearly $5,000,000.

A remarkable feature of the world's golden flood is the enormous amounts of the metal that are being used in the arts. The total consumption of new gold, including coin, for 1905, in the United States was about $23,000,000. Nearly all of the gold produced in this country passes through the mints and the government assay offices. The mint estimates the industrial consumption of gold in the world, including Asia, for the year 1904, at $80,000,000. This amount was increased in 1905, and each year promises a steady increase in the use of the metal in the arts.

The amount of gold, used as money, in the world up to January 1, 1905, was about $6,000,000,000, a sum beyond the grasp of the human mind.

The Transvaal region, the greatest gold-producing district ever discovered, has passed its highest record. It is estimated that in 1905 stock valued at $100,000,000 was extracted from these South African mines, which seem inexhaustible.

Despite the depressing effect of the Boer war, the constant difficulties presented by the South African labor questions, the Transvaal is now producing over $8,000,000 per month, with a steadily increasing output. It is expected that in a few years the maximum output of this rich region will amount to over $150,000,000. Australasia in 1905 produced about $86,000,000 in gold.

The gold stock in the nineteen principal banks and treasuries of the world (including all the great nations), at the beginning of 1905 amounted to $1,136,886,000. The other half of the world's bank-roll is distributed over the universe.

What Was Done in Silver

Last year something over 60,000,000 fine ounces of silver were added to the wealth of this country by its own mints and refineries. The previous year the country produced about one-third of the world's output, or nearly 58,000,000 ounces, fluctuating in price around 60 cents per ounce in New York City.

It is sometimes a matter of curiosity to know where the comparatively large "silver crops" of the United States go to, outside of its use as fractional money. An enormous quantity of silver dollars is in use in the West and South, the "greenback" having taken its place in the East. China also takes a large amount of silver for use as money, and India calls upon the United States for a large quantity of "raw" silver to be worked up into ornaments, the latter representing a great part of the personal wealth of the inhabitants.

The use of silver in the arts and manufacture consumes another large portion of this country's product of white metal.

The Boom in Copper

An enormous demand was created by the consumption of copper in the electrical and other mechanical industries in 1905. The output of copper in Michigan, Montana, and Arizona, the principal producing regions, amounted to 393,500 long tons.

Twenty-one American copper mines paid dividends of more than $30,000,000, equivalent to from two to two hundred per cent. of their capitalization—figures never before equaled. During the last half of 1905 more copper was absorbed in the United States than during any previous year. The leading brass mills operated approximately twenty-two hours a day, and were unable to meet orders.

During the last twelve months the United States exports in copper amounted to 350,219,200 pounds. Foreign shipments consumed a little more than one-half of the entire production of the country. To-day the annual output of copper in the United States is equal to that of the whole world ten years ago.

Iron and Steel

The wave of prosperity in 1905 included the iron and steel industry. The output of pig iron in the United States for the year was at the rate of 23,000,000 long tons, with a definite promise of increase. This is the largest output ever reported. The largest part of this amount was utilized by the steel companies.

Figures for steel are not available, but the growth is correspondingly as large as that of pig iron. Germany alone competed with the United States, with 1,000,000 tons of pig iron per month, about half of what this country has been turning out.

In the month of October, 1905, the steel plants of the United States Steel Corporation turned out 1,172,951 gross tons of steel ingots. All of Germany in the same month made only a little more than 1,000,000 tons of pig iron, and correspondingly less steel. The United States exported during the year about 1,000,000 tons of iron and steel, and imported about 350,000 gross tons of pig iron and rolled iron and steel.

It is extremely difficult to obtain the ore called ferromanganese, Southern Russia being the largest producer of manganese ores. This ore is found in small quantities in America, but the quality is inferior. The discovery of a ferromanganese ore mine in this country would be almost as profitable to-day as the discovery of a gold mine.

Products of the Soil

The work of the American farmer for 1905 was the most important industrial work done in the whole world. The last two years crops were worth more than all the gold in the world for the last four hundred years.

The American farmer is to-day in a fair way to furnish the bulk of the food supply of the world. Our American farms produced 2,708,000,000 bushels of corn, 969,000,000 bushels of oats, 684,000,000 bushels of wheat, 35,000,000 bushels of rye, and 183,000,000 bushels of barley. The grain crop of the American farms would fill 5,625,000 standard freight cars and was valued at $2,126,000,000.

Of other products, the American farmer raised 260,000,000 bushels of potatoes (worth $138,000,000), 660,000,000 pounds of tobacco (worth $52,000,000), and 60,000,000 tons of hay (worth $605,000,000).

There are 18,274,551 horses and mules on American farms (nearly as many as there are in Europe, excluding Russia, which has 20,020,000 horses and mules). Altogether our (farm) horses and mules are valued at $1,500,000,000.

Including corn, oats, wheat, barley, rice, rye, and buckwheat, the United States produced a grand total of 4,521,000,000 bushels, or 225,000,000,000 pounds.

The American farmer also raised during 1905 miscellaneous vegetables, sugar, fruits, nuts, beans, peas, and other sundries amounting to 46,000,000,000 pounds (worth more than $420,000,000). Taken altogether the primary food products of American farms for 1905 had a weight of more than 450,000,000,000 pounds, with a farm value of more than $3,500,000,000. Loaded in freight cars they would make a train which would reach nearly four times around the globe. The product of the American farmer would feed one-seventh of the human race, and would give to every man, woman and child one hundred and fifty pounds of grain—or one-fifth of their annual supply of grain food.

The entire value of the American farmers' product for 1905 amounted to $6,415,000,000, including cereals, vegetables, cotton, potatoes, beet sugar, tobacco, onions, cranberries, etc.

The Live Stock Industry

The year 1905 witnessed an increased production in the country's live stock industry. The Western live stock traffic presents one of the first concrete evidences of the year's enlarged volume of business. The combined receipts of Chicago and the four Missouri River markets for 1905 approximated 38,000,000 head, including cattle, hogs, sheep, horses and mules. Of this total, Chicago took 17,000,000 head, Kansas City 6,700,000, St. Louis 5,100,000, and Omaha 5,800,000 head. St. Joseph, heretofore a small market, last year handled 3,400,000 head.

In this one class of traffic more than three-quarters of a million carloads of freight were evolved during the year.

Chicago's receipts of all kinds of live stock had an estimated valuation of $300,000,000, and the division among the various classes of stock indicates the relative consumption and trade of the country. Chicago received 3,390,000 head of cattle, 380,000 calves, 8,236,000 hogs, 4,750,000 sheep, and 128,000 horses. Chicago's live stock receipts for last year never have been equaled and the receipts for the six Western "stock cities" (including Sioux City), were 2,700,000 head more than the receipts for 1904.

The live stock breeding industry was never more profitable, and yearly the home demand and consumption are increasing with the growing population of the country and the greater opportunities of supplying foreign markets and our own island possessions.

Last year we exported nearly 250,000,000 pounds of fresh beef alone, while 70,000,000 pounds of canned beef were sent abroad.

Packers have realized immense returns from the high price of hides and by-products. Prices for hogs ruled higher than for three years past, although the six Western markets handled a total of 18,000,000 head during the year. The range of prices for sheep was higher than ever known, although the receipts at Chi- alone showed an increase of 250,000 head over last year.

The remarkable market for sheep was caused by the high price of wool and an extraordinary consumptive demand for mutton. The exports of sheep amounted to about 200,000 head for the twelve months, the Australian output lessening the demand for American mutton.

Dairy Products

The American farmer owns a herd of about 17,570,000 cows, all told, and the produce of these cows last year is figured to be worth $665,000,000. The "hoof value" of the herd was $482,000,000. There are 47,400,000 sheep and swine.

The trade year for dairy produce in the East begins on May 1, and is divided into two periods—the closing of old winter stock and the marketing of the new crop.

The windup of 1904, therefore, found 133,000 packages in New York warehouses. Twelve thousand packages were brought from Canada to meet the demand, despite the 76 per cent. duty. On December 1 there were 406,000 packages.

The entire receipts of butter in New York for 1905 aggregated about 2,410,840 packages. We sent to Europe 127,770 packages, and exported to the tropics a grand total of more than 4,000,000 pounds.

The Cheese Trade

The cheese trade fell off last year, so far as the export trade was concerned, though the production was greater than in 1904. Only 126,239 boxes were sent to Europe, but home consumption took care of the product on hand, and prices were high. Cheese exports have been shrinking greatly since 1878, the banner year, when 2,273,075 boxes were exported.

Eggs, Poultry and Milk

Unfavorable weather conditions affected the egg trade in 1905, receipts during the early months of the year averaging something over 100,000 cases a month, with corresponding high prices. This year provision must be made for shipping 1,800,000,000 dozens of eggs.

Poultry trade was successful for the year, the "crops" being larger than ever before. The outlook for the future is very good, and large quantities of poultry are being placed in cold storage.

The milk trade of the country (like butter and cheese, etc.), can only be gauged by metropolitan consumption, which was ten per cent. in excess of 1904. The supply for New York now reaches 1,500,000 quarts daily—about 500,000 quarts bottled, and the rest "dipped," or sold from cans.

Silk Production

There are in the United States 1,029 plants devoted to silk manufacture, employing 90,000 skilled operatives. These plants are distributed all over the country, and in 1905 produced $105,000,000 worth of silk textiles. It is estimated that the production for 1906 will reach the amount of $116,000,000 and that the grand total of consumption of silk piece goods for the present year will amount to $150,000,000.

The Wool Clip

The total wool product last year reached nearly 300,000,000 pounds. The demands of manufacturers used up America's supply, and the sales for the year aggregated 233,021,000 pounds, as against 278,407,000 pounds for 1904. The imports of wool were large, to meet the domestic shortage. In the first ten months of 1905 we imported a total of all classes of wool amounting to 222,528,267 pounds.

The total stock of wool in the United States, exclusive of manufacturers' holdings, amounts to 90,025,000 pounds, as against 59,571,678 pounds a year ago.

The Rubber Industry

During the year there was an immense demand for rubber to meet the requirements of the automobile industry. The development of the India rubber trade began some five years ago. To-day rubber is indispensable, not only for this purpose, but also for insulating electrical wires, for railway air brake hose, pneumatic rock drills, and for belts and articles of clothing. Commercial motor vehicles promise to consume more rubber than all other classes of vehicles combined.

The rubber trade in the United States amounts to millions of dollars in the course of a year, demands having arisen in the rubber tire business that did not exist ten years ago.

The production of rubber is behind the demand. Most of the raw product comes from Brazil and tropical Africa, though progress has been made in the cultivation in Ceylon and Mexico. Raw rubber does not class among the products of the United States, but automobile fittings and manufactured rubber of all sorts formed a very important industry in this country last year, when we imported about 60,000,000 pounds, with an impost value of $40,000,000.

Rubber promises to become one of the most mportant and valuable of modern industries, n all its branches.

Exports and Imports

In 1905 the United States had a larger total of foreign commerce than in any earlier year. There are more markets open than ever before.

The total foreign commerce aggregates about $2,700,000,000. Of this amount the excess of exports approximates $325,000,000 over imports, the former reaching a total of more than $1,500,000,000. The imports for the same period approximate $1,175,000,000, or about $100,000,000 a month.

Imports

The goods we have purchased from other countries greatly exceed any former annual total, the increase occurring chiefly in manufacturers' materials and food-stuffs. In manufacturing materials are included hides, skins, India rubber, pig tin, raw wool, clothing wool, tobacco, etc.

The total value of sugar brought into the United States from all parts of the world, including our own islands, exceeds $150,000,000, one-third of that amount coming from our own islands. In the ten months ending last October the value of sugar brought from Porto Rico and the Hawaiian Islands amounted to a little more than $51,000,000, with November and December still unapproximated.

The total quantity of sugar brought into this country during the ten months ending last October was 4,458,000,000 pounds. Cuba sent to the United States during the ten months 2,183,000,000 pounds.

Exports

The most remarkable features of the export trade were a decrease in the exportation of wheat and an increase in the importation of cotton and manufactures.

The United States exported for the ten months ending last October $70,000,000 worth of wheat, as against $113,000,000 in the corresponding months of 1901, while flour exports for the ten months in the present year amounted to $35,750,000. The reduction in the exportation of wheat and wheat flour was due to good crops abroad and small crops at home, as well as the growth of the home demand through increased population.

The exports of cotton for the ten months ending in October were valued at $268,000,000.

Other agricultural productions which show an increase in exports are corn, $48,000,000, and oats, $5,750,000. Provisions, including meats, butter, cheese, etc., show a total of $152,000,000.

The largest gains in exports are shown in manufactured articles. For the ten months ending in October the value of these exports amounted to $471,500,000, actually forming 38 per cent. of the total domestic exports, while manufacturers' materials during the same period of ten months formed 48 per cent. of the total imports. The increased exports of manufactures were especially marked in copper, cotton goods, and products of iron and steel. In the ten months ending last October $72,000,000 worth of copper was exported. The value of cotton cloths exported during the ten months was $39,000,000.

A Great Steel Year

In iron and steel manufactures there was a total exportation of $115,500,000 during the ten months, the exports being pretty well distributed in various countries. Leather and its manufactures valued at $32,500,000 were exported during the ten months.

The most striking feature of the year's export trade has been the gain in exports to China and Japan. To China the exports for ten months ending last October amounted to more than $50,000,000, and to Japan the total exports aggregated $46,750,000.

Our total exports to Asia, considered as a whole during the ten months ending last October, amounted to $114,000,000.

A considerable increase of exports to South America is observable, $52,500,000 representing the amount. There was also a large increase in exports to Germany, the total amounting to $161,000,000 for the ten months ending last October, as against exports to the United Kingdom amounting to $403,000,000. The value of our exports to France was $62,000,000, to Canada $119,000,000, to the Netherlands $63,000,000.

Our trade with Cuba is interesting, considered in connection with the reciprocity treaty.

The total imports from Cuba in the ten months ending last October amounted to $87,000,000, our exports during the same period amounting to $36,250,000.

Trade With Our Islands

The largest total of merchandise sent to the United States by non-contiguous territories was from Hawaii. This amounted to nearly $37,000,000.

From Porto Rico merchandise valued at $16,500,000 was imported. That from the Philippine Islands was valued at $12,670,000.

The value of merchandise received from Alaska, was $8,500,000. This consisted chiefly of canned fish. Alaska sent to the United States gold valued at $10,500,000.

A Record Cotton Crop

Cotton was king in 1905—a record year for the production, and a spectacular year in speculation. The total crop of the season was 13,556,000 bales. American spinners took 4,550,000 bales, and 8,887,000 bales were exported.

Sensational developments in cotton speculation luring 1904 (prior to which year "14-cent cotton" was a thing unheard of) induced planters to increase the acreage to 31,730,000 acres —2,823,000 more than the previous season.

The market for cotton goods was a very renumerative one, the one drawback in production being the strike at Fall River which began in July, 1904, and ran into the new season, affecting 24,000 operatives and 2,300,000 spindles. All other mills were in active operation.

Great Britain is the largest consumer of American cotton, exports to that country for the season of 1904-5 amounting to 4,140,474 bales. Much of this comes back to the United States in the form of prepared fabrics, cotton cloths, etc.

France took only 857,738 bales, and the total amount sent to the continent was about 3,878,686 bales.

Prosperity of American Railroads

The growth of the railroads ran into enormous totals. Facts and figures from all authoritative sources indicate that every road in the United States was called upon to strain every nerve to meet the demands for traffic during the year.

There are 215,000 miles of track, not including sidings and what are known as second tracks, in the United States. If second, third and fourth tracks, and all the yards and sidings and yard tracks, be included, there were 300,000 miles of railroad trackage in the United States at the close of the year.

Seven great systems practically control the railroad business of this country. They are the Vanderbilt system, the Pennsylvania system, the Gould system, the Harriman lines, the Hill system, the Rock Island system, and the Southern Railway system.

Competition has been eliminated from the business of railroad transportation. Something less than two-thirds of all the railroads in the country are so closely united as to form a community of interests, leaving the outside roads dependent upon the controlling system.

[Continued on page 13]

Export shipment of John Deere Plows recently made by the John Deere Plow Co., Moline, Ill., U. S. A.

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LOCK CANAL NOW CERTAIN

That the Panama Canal when completed will have a summit level of eighty-five feet above the sea, to be reached by locks, a work estimated to cost $130,705,200, and to be completed in 8½ years, is the definite conclusion of the executive branch of the government, was shown in President Roosevelt's letter transmitting to Congress the report of the Canal Commission and a letter from Chief Engineer Stevens. Although the lock canal is favored by only a minority of the Board of Consulting Engineers, whose report is also transmitted, the Canal Commission, with the exception of Admiral Endicott, indorses the minority's plan, and this is approved by Chief Engineer Stevens, who says it will take twenty years to dig a sea-level canal, and that it will cost $25,000,000 more than the majority estimates. The President concurs in Secretary Taft's recommendation for the lock canal. He calls attention to the fact that the American engineers on the consulting board, by more than two to one, favor this plan, whereas the foreign engineers are a unit against it. He thinks this is partly explained by the fact that the Suez Canal is a sea-level canal. He mentions that although the Sault Ste. Marie Canal, a lock canal, is closed during the winter months, it carries annually three times the traffic of the Suez. The majority of the consulting engineers found that a sea-level canal would cost $247,021,000, approximately, but hold that the cost of operating and maintaining it would be much less than the lock canal. It is admitted that it would require more dredging and that one lock would have to be maintained. The question is now up to Congress.

TRADE WITH GERMANY

Consul-General Thackara, of Berlin, has compiled and forwarded a statement showing the declared exports to the United States from the consular districts of Germany during the calendar year of 1905 compared with the exports for the previous year. The United States purchased nearly $15,000,000 more merchandise from the Empire last year than in 1904. The sum total of $125,000,000 sales of German goods to the United States consists mainly of manufactured articles. On the other hand, the sales of American manufactured articles to Germany did not equal $15,000,000 (not including lard and petroleum, which were $20,000,000 additional).

CHICAGO AN IRON CENTER

One hundred years will probably see the exhaustion of the world's present iron-ore sources, according to Dr. C. Kenneth Leith, professor of geology in the University of Wisconsin, who lectured February 9th on the subject before the Geographical Society. Professor Leith says that the present known deposits of high-grade ore in the United States will be exhausted in a comparatively short period of time, and then the low-grade deposits will be drawn upon, with the result of changing the geographical location of the great steel and iron plants of the country. "It is probable that the entry of low-grade iron ores into the iron industry will have the effect of bringing the furnaces nearer the base of supply," said Dr. Leith, "and this means the removal of the iron centers from Pittsburgh and other eastern points to Chicago and points farther West. There are deposits of low-grade ore in Colorado and Wyoming, but it will be many years before they will become factors of commercial importance."

WINDMILLS ON BOARD SHIP

A novel use of windmills was made on board the exploring ship "Arctic." To save fuel, all of which must be carried, a set of windmills were erected when the ship became ice-bound. The power was employed in compressing air which was used to run a generator and charge storage batteries for lighting the ship. The system was sufficiently successful to warrant the *American Shipbuilder* in recommending the adoption of windmills on board the lightships which serve as floating lighthouses along our coast.

These vessels are where they are subject to almost continuous winds from some direction, and it is believed would make enough current not only to light their signal lamps, but sufficient to cook with and possibly warm the ship in winter. The suggestion is made that the experiment be given a thorough trial, not only on the lightships but with lighthouses also, which are usually in exposed locations.

IRRIGATION IN INDIA

In magnitude and importance the state irrigation works in British India exceed those of any other country in the world. The success of the great irrigation dams recently constructed in India is ascribed to the genius and the long and extensive experience of the Indian engineers. Egypt has but one great river, but India has many which are utilized for irrigation purposes. Moreover, India has systems of irrigation from tanks and reservoirs inapplicable in Egypt. During 1903-4 State irrigation works of all kinds in India supplied water to more than 21,500,000 acres of land, which furnish crops of an estimated value of more than £27,500,000 sterling. The acreage just mentioned slightly exceeds that of the entire State of Maine. This takes no account of the wells and other private sources of irrigation. Including these, it is believed that the total artificially irrigated area of India falls but little short of the combined acreage of England, Wales and Scotland.

PHILADELPHIA'S MONEY FACTORY

Statistics of the year's work done at the Philadelphia Mint show that 131,545,148 United States coins were struck off in 1905, valued at $10,600,657.43. Besides this, the Philippine Government had 10,003,313 pieces made here; 2,724,862 balboas of various denominations went to Panama, and Costa Rica had an order for 900,000 centimes filled.

The gold coinage amounted in value to $5,282,441. The silver coinage showed a gradual shrinkage owing to the fact that the stock of silver bullion on hand is almost exhausted, and no provision has as yet been made by Congress for a new supply. A noticeable feature was the fact that no silver dollars were struck off in 1905. This is because while there is an enormous supply of these coins on hand, there is little demand for them. Bills and gold are regarded as far preferable by the general public for amounts of a dollar and upward. The silver coins under a dollar minted amounted in value to $3,028,661. Nickels and pennies to the amount of $2,208,555.43 were struck off. A special coinage of 25,028 gold dollars for the Lewis and Clark Exposition was also made.

All dies used in making 1905 coins are now being destroyed. All traces of the 1905 impression have already been obliterated from the dies used in the Philadelphia Mint, and those coming from the Western mints are swiftly being smoothed under the big emery wheels used in the work of destruction. These Western dies come East under a strong guard and are cared for with even greater secrecy than the coins and silver stored within the mint walls. Notwithstanding the great reduction in the amount of silver coined, more pieces were struck off at the Philadelphia Mint than at the San Francisco and New Orleans Mints combined.

PAN-AMERICAN TRADE

Under the auspices of the American Academy of Political and Social Science, a meeting was held in Philadelphia for a discussion of trade relations with Latin-American countries, which will doubtless assume no little importance as a preparation for the International Conference of the Republics of North and South America to be held in Rio Janeiro next July.

Representatives from four Pan-American countries were present and addressed the conference—Senor Don Joaquin Bernardo Calvo, Minister from Costa Rica; Senor Don Ignacio Calderon, Envoy Extraordinary and Minister Plenipotentiary from Bolivia; Senor Don Joaquin D. Casasus, Ambassador Extraordinary and Plenipotentiary from Mexico, and Senor Don Joaquin Nabuco, Ambassador from Brazil.

All of them argued strongly for a closer diplomatic and industrial relation between the United States and the South and Central American republics. They presented their papers in excellent English.

Ambassador Casasus was the first speaker, entering at length into the various movements tending toward a consolidation of Pan-American interests. He said:

"The Congress of the United States, in 1888, authorized the President to invite the Governments of Mexico, Central and South America, Hayti and Santo Domingo to hold a conference, in conjunction with the United States, with the object of discussing and recommending to the respective governments a plan of arbitration for the solution of conflicts that might arise between them, and to treat, besides, on matters pertaining to the development of commercial traffic.

"This conference, held in the City of Mexico in October, 1901, yielded such beneficial results that the conference is never to be forgotten, and these results demonstrate that the United States has contributed more than any other to the commercial advancement of America, and to the progress of a noble and generous idea—universal pacification."

Ambassador Nabuco, the Brazilian, said:

"The American conscience is the sentiment of our own separate orbit, absolutely detached from the European. We are a political system wholly unconnected with the orbit of Europe. An obstacle to the growth of this Pan-American conscience lies in the great shadow that your great country throws over the rest of the continent. But the Latin Republics frankly acknowledge the guarantee afforded to the separateness of the whole American system by the existence in its midst of a mass of human energy that balances the rest of the world.

"A great function of those conferences is the formation of a public opinion throughout the continent. You have seen in what words Secretary Root put it in an address he delivered the other evening at the Brazilian Embassy in Washington: 'May we all do our share toward the building up of a sound and enlightened public of the Americas, which shall everywhere, upon both continents, mightily promote the reign of peace, of order, and of justice in every American republic.'"

Minister Calvo, after speaking in very complimentary terms of Ambassador Nabuco, and declaring also that no one would be more welcome at the third Pan-American conference than Secretary of State Elihu Root, said with regard to the Central American countries:

"We are divided into five independent States, with Panama as a sixth, which may eventually merge into a greater nation. But whether united or divided, the States of Central America have shown at all times their love for progress and advancement; they have co-operated with true ideas of Pan-Americanism to the success of the first and second conferences, therefore you are assured that they fully recognize the broad as well as the narrow interests which the Republics of America have in common; and will cheerfully now, as they have in the past, endeavor to do their part in the intelligent progress that the third conference is destined to bring about."

Minister Calderon paid tribute to the wonderful growth of American industry, declaring that "Truly, the American Commonwealth is the consummation of all theories of justice and liberty."

He described Bolivia's mineral treasures, and told of the near completion of important links in the State railroad, which would place Buenos Ayres within a few days of Bolivia. The country, he said, has no foreign debt, but has money in European banks.

AN EXPORT SPECIALTY

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Unparalleled Industrial Record of the United States

[Continued from page 11]

Another fact of interest is that one hundred men control ninety per cent. of all our American railways.

An idea of the amount of business done by the railroads during the year may be gathered from statistics based to a great extent upon the complete reports of 1904, and in this connection it is interesting to note that railroad freight traffic has doubled in seven years and railroad passenger traffic has increased approximately seventy-five per cent.

715,419,000 Passengers

More than one-half of the entire tonnage of the railways is made up of the products of the mines.

The freight tonnage of all the railways in the United States during 1904 amounted to 1,300,000,000. During the same year the railways carried 715,419,000 passengers, and the total earnings of all the railways for a single day amounted to $5,500,000.

An enormous agricultural product was moved by the railroads during the year, though the estimation in tonnage per cent. is small compared with the heavier products of the mines. An analysis of the class of freight carried shows that 51.56 per cent. consisted of products of the mines, 9.59 per cent. agricultural products, 13.41 per cent. manufactures, 12.51 per cent. lumber and forest products, 2.74 per cent. annual products.

To carry this enormous bulk the railways employed 1,700,000 freight cars, 40,000 locomotives, and 40,000 passenger cars.

A million and a quarter men were employed in the service of the railways of the United States. There were 52,451 enginemen, 55,000 firemen, 40,000 conductors, and 106,734 miscellaneous trainmen. The freight locomotives and trains placed end to end would encircle the globe.

111,000 Private Cars

Private car lines created considerable discussion during the year because of charges of favoritism and discrimination arising from their use. There were 111,000 of these cars in use in the United States, including refrigerator cars, stock cars, etc. The growth or reduction of this class of railroad equipment it is expected will depend largely on legislative action.

The last available statistics, reported June 30, 1904, showed the aggregate railway capital of the United States (measured by the par values of outstanding securities) to be $13,213,124,000, showing a capital per mile of $64,265. Including current liabilities, the total capital, funded and floating, was $68,553 per mile. The aggregate amount of railroad stock outstanding on June 30, 1904, was $6,339,899,000, of which about one-fifth was preferred stock.

The approximate freight earnings of all the railways for 1905 was $1,450,000,000. Passenger earnings for the same period amounted to $572,100,000. The income from freight traffic was three times as great as from passenger traffic.

In the last five years $1,000,000,000 has been paid out to stockholders in dividends. In 1904, $757,000,000 was paid to employees, not including salaries to officers and clerks. The officers received $25,000,000 and the office clerks $35,000,000. The total amounts paid out in salaries amounted to $817,000,000. The railroads paid out in taxes to the several States $60,000,000.

Profits from the Fisheries

The results of the New England fisheries in 1905 broke all records. Maine contributed to the food supply of the world over 1,000,000,000 packed sardines, valued at $5,000,000, and in fresh fish alone Boston sold $4,000,000 worth. The great "T wharf" in Boston handled 100,000,000 pounds of fresh fish, valued at $2,500,000. At this wharf as many as fifty fishing vessels have been moored at one time.

Gloucester, the home of the Grand Banks fishing fleet, provided for the world's consumption 125,000,000 pounds of salt fish, valued at $3,750,000, and handled fresh fish valued at $2,000,000. Boston does not produce a large quantity of salt fish, but that city is the distributing point for the bulk of the salt fish supply of the East.

In the latter part of 1905 a revolution was promised in fishing methods on the Banks. In December a new steam trawler was added to the fishing fleet, making her first trip from Boston. Since fishing began on the Banks the work has been done by sailing vessels, which send out dories on the fishing grounds, and which, in their voyages back and forth between Boston and the Banks, are at the mercy of the wind.

The dory method of fishing has cost a great many lives every year, and the uncertainty of the arrival of the sailing fleet has caused great fluctuation in prices. When one vessel gets in, all get in, and the over-supply makes prices spasmodic.

Recently, under the latter conditions, a surplus of 11,250,000 pounds of fish went to Gloucester to be cured into 50,000 quintals of salt or dried fish, and the prices changed suddenly from $2 per hundredweight to $5 per hundredweight for cod. In fact, when the market is overstocked and prices are low, most of the supply goes to the splitters.

A Fleet at $3,000,000

There are now more than five bundred vessels of all sizes in the fishing fleet, ranging in value from $1,000 to $15,000, the entire fleet being valued at about $3,000,000. If the "Spray," the new steam trawler, does the work expected of her, it may mean the passing of the old-time sailing fleet. The new steamer cost her owners $60,000. She is equipped to permit of all fishing operations being carried on from her deck without the use of dories, and the consequent loss of life attendant upon the old methods of fishing, when boats were frequently lost in the fog or run down by Atlantic steamers. The "Spray" drags her own trawl nets and is expected to make huge hauls and fast time between the fishing grounds and the home port.—*Scrap Book.*

WELLMAN NORTH-POLAR AIRSHIP VOYAGE DECLARED POSSIBLE

By CARL E. MAYERS, Aeronautic Engineer

This criticism from the viewpoint of a consulting and constructive aeronautic engineer of twenty-seven years' continuous experience should have the more weight because I own to a certain prejudice against north-polar expeditions, based upon extensive reading of past adventures in the polar regions by various means, including the ill-fated Andrée balloon attempt.

While I do not favor polar expeditions as a whole, because of waste of life and money without commensurate results, I am distinctly in favor of well-planned aeronautic efforts to discover the poles, if discover them we must, and with equipage in every way as complete in its line as previous polar marine expeditions have provided.

Among such equipment I do not include the Andrée balloon, which I considered woefully inadequate to reach the pole except by the most limited chance. To succeed there must be provided competent propelling and steering appliances and a gas vessel more impervious to hydrogen than was the Andrée balloon.

Of first consequence is the absolutely gas-tight balloon, with facilities for automatic adjustment of equilibrium in air, avoiding loss of gas or ballast as the vessel expands by heat or altitude and shrinks by cold or leaks. Surely no sea voyager will expect success with a leaky vessel, which cannot be even "bailed out," and is unprovided with oar or rudder. Such was Andrée's balloon, to tempt the frozen north without a guide. Such a wind-blown attempt should have been prefaced during several seasons by the flight of thousands of toy balloons suitably marked, to learn the course of aerial currents, as the coast surveys are provided with floating bottles to aid in preparing sea navigation charts.

Given a tight gas vessel, Mr. Wellman's previous polar experience should fit him for polar adventuring, as M. Dumont's experience fits him for aerial adventure, and his practice with large and powerful airships fits him for supervising such constructions if confined to lines entirely within his experience. Whatever novelties in structure or principle are introduced should be well tried in favorable or safe localities before tempting the polar regions beyond recall or repair. Anything otherwise would be folly.

I consider Alberto Santos-Dumont as one of the few individuals possessing ideas derived from airship experiences making him competent to pilot this aero-polar vessel. Most of the popular theories on aerial navigation are incompetent, if not blundering, and they lack proof in practice.

Without going into details at this time regarding equipment, I am, from the attention which I have given this matter during many years past, confident that the average chances with the propelled airship expedition are about ten to one in its favor compared with expeditions based on any previous attempt. Among such I do not class the Andrée balloon, which had not even the ghost of a chance. As I have no present knowledge of exact appliances to be included in the coming expedition, I cannot be more certain of results, but I have every confidence in belief that with the facilities and experience existing already in America, an American aero-polar expedition could be created and operated even more certainly than with European constructions, and in much less time.

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work has been done by sailing vessels, which send out dories on the fishing grounds, and which, in their voyages back and forth between Boston and the Banks, are at the mercy of the wind.

The dory method of fishing has cost a great many lives every year, and the uncertainty of the arrival of the sailing fleet has caused great fluctuation in prices. When one vessel gets in, all get in, and the over-supply makes prices spasmodic.

Recently, under the latter conditions, a surplus of 11,250,000 pounds of fish went to Gloucester to be cured into 50,000 quintals of salt or dried fish, and the prices changed suddenly from $2 per hundredweight to $5 per hundredweight for cod. In fact, when the market is overstocked and prices are low, most of the supply goes to the splitters.

A Fleet at $3,000,000

There are now more than five hundred vessels of all sizes in the fishing fleet, ranging in value from $1,000 to $15,000, the entire fleet being valued at about $3,000,000. If the "Spray," the new steam trawler, does the work expected of her, it may mean the passing of the old-time sailing fleet. The new steamer cost her owners $60,000. She is equipped to permit of all fishing operations being carried on from her deck without the use of dories, and the consequent loss of life attendant upon the old methods of fishing, when boats were frequently lost in the fog or run down by Atlantic steamers. The "Spray" drags her own trawl nets and is expected to make huge hauls and fast time between the fishing grounds and the home port.—*Scrap Book.*

WELLMAN NORTH-POLAR AIRSHIP VOYAGE DECLARED POSSIBLE

By CARL E. MAYERS, Aeronautic Engineer

This criticism from the viewpoint of a consulting and constructive aeronautic engineer of twenty-seven years' continuous experience should have the more weight because I own to a certain prejudice against north-polar expeditions, based upon extensive reading of past adventures in the polar regions by various means, including the ill-fated Andrée balloon attempt.

While I do not favor polar expeditions as a whole, because of waste of life and money without commensurate results, I am distinctly in favor of well-planned aeronautic efforts to discover the poles, if discover them we must, and with equipage in every way as complete in its line as previous polar marine expeditions have provided.

Among such equipment I do not include the Andrée balloon, which I considered woefully inadequate to reach the pole except by the most limited chance. To succeed there must be provided competent propelling and steering appliances and a gas vessel more impervious to hydrogen than was the Andrée balloon.

Of first consequence is the absolutely gas-tight balloon, with facilities for automatic adjustment of equilibrium in air, avoiding loss of gas or ballast as the vessel expands by heat or altitude and shrinks by cold or leaks. Surely no sea voyager will expect success with a leaky vessel, which cannot be even "bailed out," and is unprovided with oar or rudder. Such was Andrée's balloon, to tempt the frozen north without a guide. Such a wind-blown attempt should have been prefaced during several seasons by the flight of thousands of toy balloons suitably marked, to learn the course of aerial currents, as the coast surveys are provided with floating bottles to aid in preparing sea navigation charts.

Given a tight gas vessel, Mr. Wellman's previous polar experience should fit him for polar adventuring, as M. Dumont's experience fits him for aerial adventure, and his practice with large and powerful airships fits him for supervising such constructions if confined to lines entirely within his experience. Whatever novelties in structure or principle are introduced should be well tried in favorable or safe localities before tempting the polar regions beyond recall or repair. Anything otherwise would be folly.

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INTENTIONAL SECOND EXPOSURE

mier voyage à La Havane, devanca, parait-il, le vapeur-poste de plusieurs heures.

Mais la palme de la vitesse et des voyages rapides revient probablement aux deux énormes navires à cinq mâts allemands, le *Preussen* et le *Potosi*, de Hambourg. Le *Preussen* a fait le voyage de Hambourg à Iquique (Chili), en cinquante-sept jours; il lui est arrivé de faire trois cent soixante—huit nœuds en un jour et dix-sept nœuds en une heure. Le meilleur record du *Potosi* n'est inferieur à celui du *Preussen* que d'un demi-nœud.

Sur les Grands Lacs, les steamers transportant les marchandises vont souvent très vite, car la saison des voyages est courte, et l'on cherche à faire autant de voyages que possible dans l'année. Un record de dix-sept nœuds entre Buffalo et Chicago aurait été établi il y a quelques années, et une vitesse régulière de quatorze nœuds ou même davantage est chose commune. Mais sur l'eau salée, où l'on ne redoute pas la glace, les vapeurs s'en vont toujours à leur petit train de dix nœuds à l'heure ou moins—douze nœuds avec les meilleurs bateaux—et se laissent distancer par leurs rivaux à voile quand le vent souffle du bon côté.

Le moulin à semoule de maïs "Stonebreaker" à alimentation continue

Le moulin à semoule de maïs "Stonebreaker" reçoit le maïs à sa sortie de l'égreneuse et achève la semoule sans le secours d'aucune autre machine à nettoyer ou à polir. Quand elle sort du "Stonebreaker" elle est prête pour le marché.

Le maïs est introduit automatiquement et d'une façon continue, et la semoule sort de même d'une façon continue, de sorte que le moulin est toujours actionné par la même force. Les mouvements inégaux, les mouvements de houle, sont donc ainsi supprimés et avec eux les défauts qui rendent pour ainsi dire détestables les moulins à alimentation automatique. Dans les moulins à semoule à alimentation automatique, la charge, quand elle arrive naturellement, diminue le mouvement des autres machines qui doivent fonctionner de concert avec les moulins, puis, quand la charge s'écoule, toutes les machines fonctionnent à toute vitesse, ce qui les empêche de faire un travail satisfaisant.

Dans tous les autres moulins à semoule les engrenages sont très nombreux, le frottement est par suite considérable et la force que leur fonctionnement exige est près de quatre fois celle du "Stonebreaker."

Les constructeurs de ce moulin, M. M. Sprout, Waldron & Co., de Muncy, Pa., (Etats-Unis d'Amérique), fabriquent des moulins de tous genres absolument modernes, et les personnes que la question peut intéresser trouveront dans le catalogue que publie la compagnie des renseignements précieux sur les procédés de mouture les plus nouveaux et les plus perfectionnés. Et cela dans une catégorie de machines où les perfectionnements équivalent à une économie de milliers de dollars en fort peu de temps; aussi conseillons-nous fortement à nos lecteurs de se procurer ce catalogue qui est envoyé franco sur demande.

Service de messageries par les tramways à trolley

Les avantages des lignes de tramway locales et interurbaines pour le service des voyageurs sont familiers à tous les Américains. Des tramways isolés peuvent circuler plus fréquemment entre de petits endroits que ne peuvent le faire avec économie des trains de chemins de fer. On voyage dans un tramway électrique à meilleur marché que dans un train à vapeur. Le tramway zigzague de long des grandes routes, franchit collines et vallées et s'arrête partout où l'on veut; au contraire, la direction des lignes de chemin de fer dépend largement de la topographie de l'endroit, et les stations où les trains s'arrêtent sont souvent fort éloignées les unes des autres.

Les tramways à trolley commençaient à peine à mettre en relations villes et villages que l'on songea à les employer pour le transport des machandises en grande et en petite vitesse, aussi bien que pour celui des voyageurs. Dans le centre ouest, dans le New England, dans l'état de New York, les tramways électriques font un service régulier de messageries en grande vitesse. Ces tramways sont peu nombreux encore, mais leur nombre va croissant. Dans plusieurs centres importants, les chartes donnent aux compagnies le droit de transporter les marchandises en petite vitesse, et presque nulle part personne ne s'oppose à ce que ce privilege soit accordé aux compagnies de tramways électriques.

Armée et Marine

La force totale de l'armée des Etats-Unis, en temps de paix, comprend, d'après le rapport du ministre, M. Taft, 3,750 officiers et 56,064 engagés volontaires. De ce nombre, 739 officiers et 11,164 hommes sont aux Philippines. Grâce à des mesures sanitaires perfectionnées, la mortalité dans l'armée a été réduite de 8,64 à 6,75 par 1,000. M. le ministre Bonaparte dans son rapport, a recommandé l'addition a la flotte des Etats-Unis, de deux cuirassés d'escadre, de deux croiseurs éclaireurs, de quatre torpilleurs et de cinq sous-marins et cannonières. A son avis, le besoin présent de la marine n'est pas l'agrandissement, mais la substitution de nouveaux navires perfectionnés à ceux qui sont usés ou démodés. Le navire de guerre Idaho du même type que le Mississippi, d'un déplacement de 13,000 tonneaux, a été lancé à Philadelphie, le 9 décembre. C'est la toute jeune fille de M. le gouverneur Gooding qui l'a baptisé.

Le fait que l'exportation des produits agricoles américains a décru, de 1903 à 1904, de 19 millions de dollars, est dû surtout à la diminution des transactions commerciales avec l'Afrique et l'Oceanie; mais de l'augmentation de 12 millions de dollars en produits forestiers exportés, 5 millions reviennent à l'Europe, 3 millions à l'Amérique du Nord, 2 millions à l'Amérique du Sud et 2 millions à l'Océanie, l'Afrique et l'Asie. On voit aussi que l'Océanie passa du cinquième au sixième rang au point de vue de la valeur des produits agricoles exportés en 1904, mais de la cinquième à la quatrième place pour les produits forestiers exportés la même année.

L'Afrique, qui occupait le troisième rang comme pays importateur des produits agricoles américains en 1903, est descendue au quatrième rang en 1904. Ce fait est sans doute la conséquence de la guerre avec les Boers. Il faut du temps pour se relever de troubles pareils. De même, au point de vue de l'exportation des produits forestiers, l'Afrique a passé de la quatrième à la cinquième place en 1904.

Trois pays, le Royaume Uni, l'Allemagne et le Canada, se sont partagé en 1904 la moitié des produits forestiers exportés par les Etats-Unis; l'autre moitié a été répartie entre 75 autres pays. Ce commerce n'est donc pas tout à fait si concentré que celui des produits agricoles, puisque près de la moitié des produits agricoles, exportés par les Etats-Unis s'en est allée dans un seul pays. Les exportations des Etats-Unis en produits forestiers dans deux pay de l'hémisphère méridional accusent en 1904 une augmentation sur les exportations de l'année 1903: elles se sont élevées, pour la Republique argentine, de 1 million 800 mille dollars à 3 millions 200 mille dollars, et, pour l'Oceanie britannique, de 1 million 600 mille dollars à 3 millions 100 mille dollars. De même l'exportation des produits forestiers en Allemagne excède, en 1904, de 2 millions 500 mille dollars la valeur des mêmes produits exportés en 1903.

Exportations des Etats-Unis en outils agricoles

Depuis l'année 1899, époque à laquelle nos exportations en outils agricoles dépassèrent, pour la première fois, celles de la Grande Bretagne, les Etats-Unis n'ont cessé d'être les plus gros exportateurs du monde entier en machines agricoles. El cependant même parmi les manufacturiers, beaucoup ne peuvent voir le rôle important que jouent les exportations dans le succès de cette branche des manufactures, ni la nécessité d'un débouché extérieur pour la prospérité de l'industrie en general. En 1900, le nombre total des établissements s'occupant de la construction des machines agricoles était de 715. Ces établissements occupaient 46,582 ouvriers et 10,046 commis en écritures et fonctionnaires salariés. La valeur annuelle de la production fut de 101,207,428 dollars; elle n'était que de 81,271,651 dollars dix ans plus tôt, de 68,640,486 dollars en 1880, de 52,066,875 dollars en 1870, de 20,831,904 dollars en 1860 et de 6,842,611 dollars en 1850.

Quelque rapides qu'aient été les progrès de la production, il est important de noter que l'augmentation de nos exportations dans cette catégorie de produits a été beaucoup plus rapide encore, ce qui prouve que, la limite de la capacité du marché national ayant été atteinte, nos manufacturiers ont attaqué les marchés extérieurs avec une énergie et un succès croissants. De 1850 à 1860 les exportations de machines agricoles ne furent pas classées séparément, fait qui en lui-même indique que le commerce extérieur en machines agricoles était trop faible pour mériter beaucoup d'attention. En 1870, les exportations de machines agricoles se sont élevées à 1,068,476 dollars, soit un peu plus de 2 pour cent. En 1880, elles atteignaient le chiffre de 2,245,742 soit 3,27 pour cent. En 1890, elles s'élevaient à 3,859,184 dollars, soit 4.74 pour cent. Il y a progrès assurément, mais il est lent, ce qui prouve que pendant cette longue série d'années nos manufacturiers n'ont guère pu faire mieux que d'approvisionner notre marché national.

A partir de 1900, les chiffres nous racontent une histoire toute différente. Dans l'année 1900 ellemême, les exportations se sont elevées à 16,099,149 dollars, soit 15.9 pour cent. Dans les deux années suivantes les exportations, exprimées en dollars, demeurèrent stationnaires, et il est probable qu'il en fut de même du pourcentage puisque la production n'augmenta guère durant cette période. En 1903 les exportations firent un bond: elles s'élevèrent à 21,006,622 dollars, et, l'année suivante, à 22,749,635 dollars. Pour l'année prenant fin en juin dernier, on remarque une légère diminution: le chiffre des exportations n'est plus que de 20,721,741 dollars. On peut toutefois dire que la moyenne des trois dernières années a atteint environ le 20 pour cent de la production, et que cette proportion est par conséquent la mesure de l'importance du débouché extérieur pour nos manufacturiers d'outils agricoles. Il n'est pas un manufacturier qui ne sache ce que la perte d'un cinquième de ce débouché signifierait pour lui. A l'heure actuelle, les marchés extérieurs consomment le cinquième de la production de nos outils agricoles. Une proportion si considerable est d'une importance vitale; aussi nos plus habiles manufacturiers d'instruments agricoles sont-ils fortement engagés dans la lutte qui a pour but de conserver le terrain gagné dans les marchés extérieurs et s'opposent-ils de toutes leurs forces à ceux qui cherchent à étrangler notre commerce extérieur en exposant la nation à des controverses de tarifs si faciles à éviter.

Heureusement, le marché extérieur pour nos outils agricoles, différant en cela du marché extérieur ouvert à notre coton, est assez vaste. Un trait particulier de notre commerce d'exportation en outils agricoles, à le considérer pendant le cours d'une longue série d'années, c'est la manière dont un nouveau debouché s'est ouvert pour prendre la place d'un autre qui, pour quelque raison, cessait tout à coup d'être aussi bon. Ainsi, une certaine année, la Russie a été notre meilleur client; une autre année, ce fut le Canada; une autre encore, la République Argentine. La Grande Bretagne, la France, l'Allemagne sont également des marchés qui consomment chaque année pour plus d'un million de dollars de nos outils agricoles. Le Mexique est un bon client, remarquablement constant, qui nous achète annuellement en outils agricoles pour quelque chose comme 300,000 à 400,000 dollars. Cuba est un marché qui semble avoir de l'avenir, grâce aux traités de réciprocité. Cette île augmenté ses achats de 55,756 dollars en 1903 à 208,908 dollars en 1905.

Le Chili, pendant les deux dernières années, a acheté pour 250,000 dollars chaque année. Le Brésil, qui était un marché médiocre depuis plusieurs années, a triplé ses achats de l'année dernière. Ceux-ci s'élevaient à 51,757 dollars; ils s'élèvent cette année à 151,715 dollars. Le reste de l'Amérique du Sud, de l'Amérique centrale et des Indes occidentales, constitue, pris en masse, des marchés médiocres. L'Afrique britannique acheta considérablement après la guerre; ses achats s'élevaient à plus d'un million de dollars en 1903, mais elle est aujourd'hui complètement approvisionnée; ses achats qui s'élevaient à 673,737 dollars en 1904, n'ont atteint l'année dernière que 423,073 dollars. Les achats de la Mélanésie ont également considérablement diminué; ils ont passé de 1,555,085 dollars en 1904 à 1,159,933 en 1905. D'un autre côté, la République argentine a battu le record des importations. Les achats, qui étaient de 2,821,257 dollars en 1903, de 3,996476 dollars en 1904, se sont élevés à 5,032,853 dollars en 1905. Les nouveaux règlements des douanes contre l'importation des pièces détachées, règlements dont on a usé et abusé, nuiront sans doute à notre commerce dans une certaine mesure, et en tout cas, les achats considérables de l'année passée auront sans doute approvisionné le marché pour quelques années et il faut nous attendre à de faibles ventes de ce côté-là.

Le Canada, qui achetait aux Etats-Unis des instruments agricoles pour une valeur de 4,023,857 dollars en 1903, n'en achetait que pour 3,362,113 dollars en 1904, et seulement pour 1,898,915 dollars en 1905. Cette diminution accentuée peut être attribuée, dans une certaine mesure, à l'établissement de fabriques américaines sur le sol canadien. L'Europe, pour diverses raisons, n'a acheté que fort peu en 1905. La Grande Bretagne, l'un de nos clients les plus fidèles, ne nous a acheté que pour 1,068,381 dollars, tandis que ses achats de 1904 s'élevaient à 1,921,179 dollars; nos exportations en France ont descendu de 3,063,752 dollars à 2,817,998 dollars; nos exportations en Allemagne ont également descendu de 1,579,026 dollars à 1,246,101 dollars. Mais, d'un autre côté, les exportations en Russie ont augmenté: de 3,342,130 dollars en 1904, elles étaient de 3,812,705 dollars en 1905. Nos exportations dans les autres parties de l'Europe ont également diminué: de 4,559,601 dollars en 1903, elles n'étaient plus que de 3,362,113 dollars en 1904, et seulement de 1,898,915 dollars en 1905. Cette baisse, toutefois, ne semble pas due à quelque hostilité contre les marchandises américaines, ou même à la concurrence, mais au fait que les pays sont approvisionnés et que par suite la demande est faible.

On s'attend à un réveil modéré pour l'année qui commence, surtout en Grande Bretagne et en France, et l'on peut être sûr que nos énergiques manufacturiers, toujours sur le qui-vive, feront tout ce qui dépendra d'eux pour faire pénétrer leurs produits sur les marchés neutres: il est essentiel qu'ils aient un débouché pour le cinquième de leur production.—*N. Y. Commercial.*

Moulins à Vent et pylónes

Fondée en 1854, la U. S. Wind Engine and Pump Company, est aujourd'hui la plus ancienne fabrique de moulins à vent du monde entier. Ses produits ont été exportés dans tous les coins du globe, et la réputation de cette maison est aujourd'hui universelle. Elle ne fut d'abord qu'une fabrique de moulins à vent, mais elle dût bientôt ajouter à ses produits principaux d'autres produits intimement liés aux premiers. Elle s'est donc mise à construire, presque dès ses débuts, des pompes, des réservoirs, des accessoires divers, et aujourd'hui elle est en état de fournir à ses clients tous ces articles aussi bien que les moulins à vent proprement dits. Ces derniers sont de diverses grandeurs: ils ont de 6 à 40 pieds de diamètre, et ils sont ou en bois ou en acier galvanisé.

La construction des pylónes en acier destinés à supporter des réservoirs élevés, constitue depuis longtemps l'une des principales branches de la production de cette compagnie qui vient d'être obligée tout récemment d'accroître ses facilités de construction pour pouvoir faire face à la demande-toujours croissante de ces produits. Outre les moulins à vent, la compagnie fabrique encore des moulins destinés à la mouture des aliments pour animaux, des égreneuses de maïs, des scies à bois, etc, et dans tous ces instruments, on a cherché à obtenir le rendement maximum avec le minimum de force.

Au moment où nous mettons sous presse, de nouveaux bâtiments, actuellement en cours de construction, achèvent de se bâtir, et la compagnie va se trouver cette année mieux équipée que jamais pour servir ses clients avec promptitude. Adresser toute correspondance pour l'exportation à l'U. S. Wind Engine and Pump Co., à Batavia, Ill. (Etats-Unis d'Amérique). Un département spécial, récemment organisé dans ce but, en prendra soin. Toutes les lettres recevront une réponse immédiate, et aucun effort ne sera épargné pour que les transactions soient de toutes manières facilitées.

Suprématie du Monitor

C'est toujours un plaisir pour nous que d'attirer l'attention de nos lecteurs sur les inventions mécaniques susceptibles de contribuer au progrès du monde agricole. Parmi les machines pour la distribution des graines dans le sol, l'une des plus importantes qui soient venues à notre connaissance, une machine qui économise non seulement beaucoup de temps et de main d'œuvre, mais qui, en réalité, fait pousser deux brins d'herbe là où il n'en poussait qu'un, nous citerons le semoir à grain Monitor, à double disque.

On a assuré que ce mécanisme du double disque augmente de 4 à 7 boisseaux par acre le rendement d'un champ qui serait ensemencé au moyen d'autres mécanismes. Ce disque Monitor est protégé par douze brevets des Etats-Unis; il représente le fruit de trente-cinq années d'études et d'expériences pratiques dans la fabrication des semoirs. Il est construit par The Monitor Drill Company, de Minneapolis, Minn. (Etats-Unis d'Amérique). Le catalogue de la compagnie sera envoyé franco sur demande. Elle se fera d'ailleurs un plaisir de fournir tous les renseignements supplémentaires que l'on pourrait désirer.

Un danger moderne

Chicago passe par une phase du siècle de l'acier qui n'est pas sans désagrément ni sans danger pour les gens qui doivent circuler dans les rues du quartier central des affaires.

Presque dans chaque pâté de maison est en train de se construire un squelette d'acier qui servira de support à quelque tour de Babel moderne, et dans ce squelette des foreuses et des perceuses pneumatiques sont à l'œuvre. Quelques-unes de ces machines fonctionnent à une telle hauteur que les infinité simales particules d'acier qu'elles éparpillent de tous côtés sont emportées par le vent à des distances incroyables et viennent souvent se loger dans les yeux des hommes et des animaux.

"J'ai eu une vingtaine de patients de ce genre dans l'espace de quelques semaines," disait un oculiste de la ville basse." Je ne savais guère qu'en penser tout d'abord. Des gens venaient ici, les yeux injectés, souffrant terriblement et je ne pouvais découvrir la substance irritante. Dans quelques-uns de ces cas l'intérieur de la paupière était coupé et comme lacéré avec un couteau. Au moyen d'une loupe je découvris un extrêmement petit morceau d'acier. Cette découverte simplifia dès lors la question. L'action de ces outils pneumatiques remplit l'air de particules d'acier, quelques-unes trop petites même pour être discernées avec une loupe, et qui pourtant coupent comme un diamant."

Les prix Nobel

Les prix Nobel, qui récompensent les services distingués rendus dans les diverses branches de l'activité humaine pour le bien de l'humanité ont été décernés à Stockholm, le 10 décembre dernier. Le prix pour la physique a été donné à M. le professeur Philipp Meyer von Lenard, de l'Université de Kiel, pour ses travaux sur les rayons de la cathode; pour la chimie, au professeur Adolf von Bayer, de l'Université de Munich, pour des recherches ayant contribué au développement de la chimie organique et de l'industrie chimique; pour la médecine, au professeur Robert Koch, de Berlin, pour ses recherches sur la tuberculose; pour la littérature à Henryk Sienkiewicz, le romancier polonais; et pour la promotion de la paix, à la baronne von Suttner, d'Autriche, qui s'est dès longtemps fait remarquer dans les mouvements internationaux en faveur de la paix. Chacun de ces prix s'élève à 40,000 dollars environ.

Outils américains modèles

Nous attirons tout spécialement l'attention de nos lecteurs sur l'annonce de l'Ohio Cultivator Company, de Bellevue, Ohio (Etats-Unis d'Amérique). On trouvera cette annonce à une autre page de ce numéro.

Nous sommes fiers de compter l'Ohio Cultivator Company parmi les commerçants qui annoncent régulièrement leurs produits dans les colonnes de notre journal. A en juger par son passé, par la demande considérable que ses produits ont créée, par ses affaires si prospères de l'heure présente—prospérité bien méritée certes—par l'honnêteté, l'intégrité de la compagnie, nous ne pouvons nous empêcher de lui prédire l'avenir le plus heureux. Nous prenons plaiser à louer les qualités des produits de cette compagnie parce que l'expérience nous a appris à connaitre les hommes qui la dirigent et nous les savons hommes de parole.

Nous pouvons en toute sincérité recommander l'Ohio Cultivator Co. à tous ceux de nos lecteurs qui peuvent avoir besoin de quelque produit de la catégorie de ceux que cette compagnie fabrique; nous n'hésitons à leur dire qu'ils seront traités avec l'honnêteté et la bonne foi qui n'ont cessé de caractériser les transactions de cette compagnie.

La question de la force

La question de la force est souvent sur le tapis. Il faut, pour diverses catégories de travaux, une force appropriée, satisfaisante. Il est de haute importance pour le client qui se trouve loin d'une source centrale d'énergie et qui ne peut se procurer aisément l'aide d'ouvriers expérimentés, que la source de force qu'il introduit chez lui soit une machine aussi simple que possible, solide, durable, sans danger, et d'un fonctionnement assuré.

Pour satisfaire à toutes ces exigences, la maison bien connue James Leffel & Co., de Springfield, Ohio (Etats-Unis d'Amérique), offre un assortiment de machines et chaudières à vapeur, de 3 à 60 chevaux, de dimensions et de modèles très variés. Parmi les excellentes machines que cette compagnie met sur les marché, le client étranger trouvera sûrement, dans les limites de force sus indiquées, une machine ou une chaudière qui satisfasse pleinement à ses besoins.

La maison envoie franco sur demande un catlogue illustré où les machines sont décrites. Tous renseignements supplémentaires seront cordialement fournis. S'adresser, en indiquant le travail que les machines auront à faire, aux constructeurs: James Leffel & Co., Springfield, Ohio (Etats-Unis d'Amérique).

EXPORT IMPLEMENT AGE

PARA CIRCULAR EN EL EXTRANJERO SOLAMENTE.

Periódico independiente, dedicado exclusivamente al fomento del comercio de exportación en maquinaria para la Agricultura y lecherías, bombas, molinos de viento, aperos de labranza y suministros á cortijos, haciendas, ingenios de hacer azúcar, sitios de labor etc.

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La misma firma publica el "Implement Age" y el "American Fertilizer."

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En el Directorio para Compradores, en la primera parte, hallarán nuestros lectores los informes en el idioma español, a fin de que puedan entablas una correspondencia más satisfactoria con nuestros anunciantes.

El Africa Britànica Abastecida

Chile durante los ultimos dos años nos ha comprado por valor de $250,000 al año. El Brasil, que por muchos años nos ofrecia un pobre mercado, ha triplicado en 1905 sus compras del año anterior, comprándonos por valor de $151,715, contra $51,757. El resto de Sud América, Centro América y las Antillas ofrecen en general pobres mercados. El Africa Británica fué fuerte comprador inmediatamente después de la guerra, tomándonos por valor de más de un millón en 1903; y sólo nos tomó por valor de $423,072, contra $673,737 en 1904. Australia también disminuyó sus compras, tomándonos por valor de $1,159,933 el último año fiscal, contra $1,155,085 el año anterior. La Argentina, por otra parte, estableció un antecedente, habiéndonos comprado por valor de $5,032,853, contra $3,966,476 el año pasado, y $2,821,257 en 1903. El nuevo reglamento arancelario contra la libre importación de partes, que sin duda se ha abusado mucho, puede reducir algo nuestro comercio, mientras que en todo caso las fuertes compras del año pasado significarán grandes existencias en almacén, y escasas compras por algún tiempo.

El Canadá que compró instrumentos agrícolas americanos por valor de $4,023,857 en 1903, bajó sus compras á $3,362,113 el año pasado, y á $1,898,915 este año. Hasta cierto punto puede atribuirse esa gran diminución al establecimiento de fábricas de instrumentos agrícolas americanas al otro lado de la frontera. La Europa por varias razones nos compró comparativamente poco el año pasado. Inglaterra, uno de nuestros más constantes parroquianos, sólo nos compré por valor de $1,068,381, contra $1,921,179 en 1904. Nuestras exportaciones á Francia bajaron de $3,063,752 á $2,817,998; las exportaciones á Alemania de $1,579,026 á $1,246,101. Las exportaciones á Rusia, por otra parte, aumentaron de $3,342,130 á $3,812,705; pero las exportaciones á otros paises de Europa bajaron de $4,559,601 en 1903 á $3,362,113 el año pasado, y á $1,898,915 el año fiscal que terminó el 30 de Junio de 1905. Esos rebajos aparentemente no se deben tanto a una hostilidad contra las mercancias americanas, ó al aumento de la competencia como á las grandes existencias en sus almacenes y á la escasa demanda.

Se espera, sin embargo, un moderado restablecimiento de la demanda durante el año entrante, particularmente en la Gran Bretaña y en Francia, mientras que de nuestros despiertos y enérgicos manufactureros se puede depender para que hagan una propaganda más vigorosa en favor de sus productos en los mercados neutrales, con el fin de darle salida á una quinta parte de su produccion, como esencial necesidad para sus intereses.—*N. Y. Commercial.*

El Molino "Stonebreaker" para Harina Gruesa de Maiz

El Molino "Stonebreaker" para Harina de Maiz gruesa toma el maiz de la Desgranadora y muele grueso el grano, produciendo la harina gruesa lista para el mercado, sin la ayuda de ninguna otra máquina para limpiarla, separarla ó pulirla.

La máquina es de alimentación continua y de descarga continua, funcionando asi con fuerza igual en todos tiempos, evitándose ese movimiento desigual y onduloso que, según se dice, hace impopulares los molinos de carga y automáticos. Los molinos de harina de maiz gruesa cuando se alimentan automáticamente, se disminuye naturalmente el movimiento de otra maquinaria que funcione en conexión con ellos; luégo cuando la carga se echa fuera, toda la maquinaria funciona con gran velocidad, lo que necesariamente impide se haga un trabajo satisfactorio. En todos los demás molinos de harina de maiz gruesa se dice que hay tanto engranaje, siendo, de consiguiente tan grande la fricción, que se requiere, para hacerlos funcionar una fuerza casi cuatro veces tan grande como la que requiere esta máquina.

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Moulins à Vent et pylónes

Fondée en 1854, la U. S. Wind Engine and Pump Company, est aujourd'hui la plus ancienne fabrique de moulins à vent du monde entier. Ses produits ont été exportés dans tous les coins du globe, et la réputation de cette maison est aujourd'hui universelle. Elle ne fut d'abord qu'une fabrique de moulins à vent, mais elle dût bientôt ajouter à ses produits principaux d'autres produits intimement liés aux premiers. Elle s'est donc mise à construire, presque dès ses débuts, des pompes, des réservoirs, des accessoires divers, et aujourd'hui elle est en état de fournir à ses clients tous ces articles aussi bien que les moulins à vent proprement dits. Ces derniers sont de diverses grandeurs: ils ont de 6 à 40 pieds de diamètre, et ils sont ou en bois ou en acier galvanisé.

La construction des pylônes en acier destinés à supporter des réservoirs élevés, constitue depuis longtemps l'une des principales branches de la production de cette compagnie qui vient d'être obligée tout récemment d'accroitre ses facilités de construction pour pouvoir faire face à la demande-toujours croissante de ces produits. Outre les moulins à vent, la compagnie fabrique encore des moulins destinés à la mouture des aliments pour animaux, des égreneuses de maïs, des scies à bois, etc. et dans tous ces instruments, on a cherché à obtenir le rendement maximum avec le minimum de force.

Au moment où nous mettons sous presse, de nouveaux bâtiments, actuellement en cours de construction, achèvent de se bâtir, et la compagnie va se trouver cette année mieux équipée que jamais pour servir ses clients avec promptitude. Adresser toute correspondance pour l'exportation à l'U. S. Wind Engine and Pump Co., à Batavia, Ill. (Etats-Unis d'Amérique). Un département spécial, récemment organisé dans ce but, en prendra soin. Toutes les lettres recevront une réponse immédiate, et aucun effort ne sera épargné pour que les transactions soient de toutes manières facilitées.

Suprématie du Monitor

C'est toujours un plaisir pour nous que d'attirer l'attention de nos lecteurs sur les inventions mécaniques susceptibles de contribuer au progrès du monde agricole. Parmi les machines pour la distribution des graines dans le sol, l'une des plus importantes qui soient venues à notre connaissance, une machine qui économise non seulement beaucoup de temps et de man d'œuvre, mais qui, en réalité, fait pousser deux brins d'herbe là où il n'en poussait qu'un, nous citerons le semoir à grain Monitor, à double disque.

On a assuré que ce mécanisme du double disque augmente de 4 à 7 boisseaux par acre le rendement d'un champ qui serait ensemencé au moyen d'autres mécanismes. Ce disque Monitor est protégé par douze brevets des Etats-Unis; il représente le fruit de trente-cinq années d'études et d'expériences pratiques dans la fabrication des semoirs. Il est construit par The Monitor Drill Company, de Minneapolis, Minn. (Etats-Unis d'Amérique). Le catalogue de la compagnie sera envoyé franco sur demande. Elle se fera d'ailleurs un plaisir de fournir tous les renseignements supplémentaires que l'on pourrait désirer.

Un danger moderne

Chicago passe par une phase du siècle de l'acier qui n'est pas sans désagrément ni sans danger pour les gens qui doivent circuler dans les rues du quartier central des affaires.

Presque dans chaque pâté de maison est en train de se construire un squelette d'acier qui servira de support à quelque tour de Babel moderne, et dans ce squelette des foreuses et des perceuses pneumatiques sont à l'œuvre. Quelques-unes de ces machines fonctionnent à une telle hauteur que les infinité simales particules d'acier qu'elles éparpillent de tous côtés sont emportées par le vent à des distances incroyables et viennent souvent se loger dans les yeux des hommes et des animaux.

"J'ai eu une vingtaine de patients de ce genre dans l'espace de quelques semaines," disait un oculiste de la ville basse." Je ne savais guère qu'en penser tout d'abord. Des gens venaient ici, les yeux injectés, souffrant terriblement et je ne pouvais découvrir la substance irritante. Dans quelques-uns de ces cas l'intérieur de la paupière était coupé et comme lacéré avec un couteau. Au moyen d'une loupe je découvris un extrêmement petit morceau d'acier. Cette découverte simplifia dès lors la question. L'action de ces outils pneumatiques remplit l'air de particules d'acier, quelques-unes trop petites même pour être discernées avec une loupe, et qui pourtant coupent comme un diamant."

Les prix Nobel

Les prix Nobel, qui récompensent les services distingués rendus dans les diverses branches de l'activité humaine pour le bien de l'humanité ont été décernés à Stockholm, le 10 décembre dernier. Le prix pour la physique a été donné à M. le professeur Philipp Meyer von Lenard, de l'Université de Kiel, pour ses travaux sur les rayons de la cathode; pour la chimie, au professeur Adolf von Bayer, de l'Université de Munich, pour des recherches ayant contribué au développement de la chimie organique et de l'industrie chimique; pour la médecine, au professeur Robert Koch, de Berlin, pour ses recherches sur la tuberculose; pour la littérature à Henryk Sienkiewicz, le romancier polonais; et pour la promotion de la paix, à la baronne von Suttner, d'Autriche, qui s'est des longtemps fait remarquer dans les mouvements internationaux en faveur de la paix. Chacun de ces prix s'élève à 40,000 dollars environ.

Outils américains modèles

Nous attirons tout spécialement l'attention de nos lecteurs sur l'annonce de l'Ohio Cultivator Company, de Bellevue, Ohio (Etats-Unis d'Amérique). On trouvera cette annonce à une autre page de ce numéro.

Nous sommes fiers de compter l'Ohio Cultivator Company parmi les commerçants qui annoncent régulièrement leurs produits dans les colonnes de notre journal. A en juger par son passé, par la demande considérable que ses produits ont créée, par ses affaires si prospères de l'heure présente—prospérité bien méritée certes—par l'honnêteté, l'intégrité de la compagnie, nous ne pouvons nous empêcher de lui prédire l'avenir le plus heureux. Nous prenons plaiser à louer les qualités des produits de cette compagnie parce que l'expérience nous a appris à connaitre les hommes qui la dirigent et nous les savons hommes de parole.

Nous pouvons en toute sincérité recommander l'Ohio Cultivator Co. à tous ceux de nos lecteurs qui peuvent avoir besoin de quelque produit de la catégorie de ceux que cette compagnie fabrique; nous n'hésitons à leur dire qu'ils seront traités avec l'honnêteté et la bonne foi qui n'ont cessé de caractériser les transactions de cette compagnie.

La question de la force

La question de la force est souvent sur le tapis. Il faut, pour diverses catégories de travaux, une force appropriée, satisfaisante. Il est de haute importance pour le client qui se trouve loin d'une source centrale d'énergie et qui ne peut se procurer aisément l'aide d'ouvriers expérimentés, que la source de force qu'il introduit chez lui soit une machine aussi simple que possible, solide, durable, sans danger, et d'un fonctionnement assuré.

Pour satisfaire à toutes ces exigences, la maison bien connue James Leffel & Co., de Springfield, Ohio (Etats-Unis d'Amérique), offre un assortiment de machines et chaudières à vapeur, de 3 à 60 chevaux, de dimensions et de modèles très variés. Parmi les excellentes machines que cette compagnie met sur les marché, le client étranger trouvera sûrement, dans les limites de force sus indiquées, une machine ou une chandière qui satisfasse pleinement à ses besoins.

La maison envoie franco sur demande un catlogue illustré où les machines sont décrites. Tous renseignements supplémentaires seront cordialement fournis. S'adresser, en indiquant le travail que les machines auront à faire, aux constructeurs: James Leffel & Co., Springfield, Ohio (Etats-Unis d'Amérique).

EXPORT IMPLEMENT AGE

PARA CIRCULAR EN EL EXTRANJERO SOLAMENTE.

Periódico independiente, dedicado exclusivamente al fomento
del comercio de exportación en maquinaria para la Agricultura y lécherias, bombas, molinos de viento,
aperos de labranza y suministros á cortijos,
haciendas, ingenios de hacer azúcar,
sitios de labor etc.

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PUBLISHERS
1010 Arch St., Philadelphia, Pa., E.U. del N.A.
La misma firma publica el "Implement Age" y el
"American Fertilizer."

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Tomo XIII. Filadelfia, E. U. del N. A. Febrero, de 1906. No. 5

En el Directorio para Compradores, en la primera parte, hallarán nuestros lectorea los informes en el idioma español, a fin de que puedan entablas una correspondencia màs satisfactoria con nuestros anunciantes.

El Africa Britànica Abastecida

Chile durante los ultimos dos años nos ha comprado por valor de $250,000 al año. El Brasil, que por muchos años nos ofrecia un pobre mercado, ha triplicado en 1905 sus compras del año anterior, comprándonos por valor de $151,715, contra $51,757. El resto de Sud América, Centro América y las Antillas ofrecen en general pobres mercados. El Africa Británica fué fuerte comprador inmediatamente después de la guerra, tomándonos por valor de más de un millón en 1903; y sólo nos tomó por valor de $423,072, contra $673,737 en 1904. Australia también disminuyó sus compras, tomándonos por valor de $1.159.933 el último año fiscal, contra $1.155.085 el año anterior. La Argentina, por otra parte, estableció un antecedente, habiéndonos comprado por valor de $5.032,853, contra $3.996,476 el año pasado, y $2.821,257 en 1903. El nuevo reglamento arancelario contra la libre importación de partes, que sin duda se ha abusado mucho, puede reducir algo nuestro comercio, mientras que en todo caso las fuertes compras del año pasado significarán grandes existencias en almacén, y escasas compras por algún tiempo.

El Canadá que compró instrumentos agrícolas americanos por valor de $4.023,857 en 1903, bajó sus compras á $3.362,113 el año pasado, y á $1.898,915 este año. Hasta cierto punto puede atribuirse esa gran diminución al establecimiento de fábricas de instrumentos agrícolas americanas al otro lado de la frontera. La Europa por varias razones nos compró comparativamente poco el año pasado. Inglaterra, uno de nuestros más constantes parroquianos, sélo nos compré por valor de $1.068,381, contra $1.921,179 en 1904. Nuestras exportaciones á Francia bajaron de $3.063,752 á $2.817,998; las exportaciones á Alemania de $1.579,026 á $1.246,101. Las exportaciones á Rusia, por otra parte, aumentaron de $3.342,130 á $3.812,705; pero las exportaciones á otros países de Europa bajaron de $4.559,601 en 1903 á $3.362,113 el año pasado, y á $1.898,915 el año fiscal que terminó el 30 de Junio de 1905. Esos rebajos aparentemente no se deben tanto a una hostilidad contra las mercancías americanas, ó al aumento de la competencia como á las grandes existencias en sus almacenes y á la escasa demanda.

Se espera, sin embargo, un moderado restablecimiento de la demanda durante el año entrante, particularmente en la Gran Bretaña y en Francia, mientras que de nuestros despiertos y enérgicos manufactureros se puede depender para que hagan una propaganda más vigorosa en favor de sus productos en los mercados neutrales, con el fin de darle salida á una quinta parte de su producción, como esencial necesidad para sus intereses.—*N. Y. Commercial.*

El Molino "Stonebreaker" para Harina Gruesa de Maiz

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INTENTIONAL SECOND EXPOSURE

Modo Novel de Anunciar

Una emprendedora casa de ferretería é instrumentos agrícolas del Oeste de este país inventó, con un' buen éxito fenomenal, un plan singular de anunciarse, no solamente divertido para el pueblo, sino también muy provechoso para la casa. Esa firma le envió á todos los hacendados de los alrededores varias semanas antes del suceso una circular ofreciendo un premio de $10.00 oro al que trajese á su población un vehiculo cargado con el mayor número de personas, con la única condición de que debian llegar alli antes del medio dia de un Sábado indicado, para que cada cargamento humano fuese contado por un miembro de la firma en frente de su establecimiento mercantil.

La sutileza del plan es aparente. Cierta de recibir el benefio que acompaña á la distribución de sus circulares, la compañia no perdia nada haciendo el gasto necesario. Lo único cuestionable era el que mordiese la carnada de los $10.00 la gente campesina.

Que casi todos los hacendados de los dos condados no sólo mordieron la carnada, sino que hicieron cuanto pulieron por llevársela se demostró el día designado en que vehiculos de toda clase y condiciones tirados por caballos de tiro y bueyes, y también por corceles de buena raza, empezaron a desembocar por todos los caminos cada vehiculo cargado hasta donde los permitia su respectiva capacidad de hombres, mujeres y niños. Nunca desde que la gran procesión de pájaros raros y de animales del hemisferio habitable é inhabitable de John Robinson apareció en aquella población se vió en sus calles semejante raunión de gente campesina.

Empezaron á llegar desde poco después de la salida del sol, y continuaron llegando hasta el mediodía. A medida que iba llegando cada vehiculo y depositando sus ocupantes delante del establecimiento, iba aumentando la multitud tanto de curiosos del lugar como de competidores.

El número de personas llevadas alli hasta las diez de la mañana variaba de 20 á 50, cuando llegó uno que llevaba 51. Ya se creía haber ganado el premio cuando, á las once y veinte minutos llegó un hacendo conduciendo una galera de 50 pies de largo que llevaba 80 personas. Ese superba tanto en el número de su carga humana á cualquier otro competidor, y habia llegado tan cerca del mediodia, que se dijo uno de su partida.

"Es seguro que habéis ganado el premio," dijo une de su partida.

"Ya calculo que es asi," dijo él metiéndose la mano en la faltriquera como para manosear el dinero de que ya se consideraba dueño, y tal era su confianza que fué á comprar un sombrero nuevo y una chalina y entró en una barbería, donde se hizo afeitar y cortar el pelo, y se hizo limpiar los zapatos, descansand en la creencia de que había ganado los diez pesos.

Pero apenas salió de la barbería cuando aquel gentio prorumpió en un clamoreo al ver acercarse un vehículo como no se había visto nuncá en las calles de aquella población y que probablemente no volverá á verse jamaás.

El carro tenia 85 pies de largo y 20 de ancho. Descansaba sobre ocho ruedas y tiraban de él ocho fuertes caballos. Sentadas en sus asientos ó bancos había un número suficiente de seres humanos, hombres, mujeres y niños, para fundar una colonia en Oklahoma ó abrir una resrvación en Dakota.

El hombre que llevaba las riendas con la habilidad de un conductor de circo ecuestre por sobre los ocho caballos venía de una aldea de tres casas y treinta habitantes, situada á unas 15 millas de aquella población. El condujo su enorme vehiculo alrededor de la plaza, seguido de un inmenso gentio victoreándolo á gaznate tendido, y con aire de orgullo detuvo sus ochos corceles en el lugar debido, donde fué contada detenidamente su cargamentn: se componia de 110 personas.

El Ejército y la Marina

La fuerza total del ejército regular de los Estados Unidos, según el informe oficial del Secretario de la Guerra Taft, se compone de 3,750 oficiales y 56,064 soldados. De estos 739 oficiales y 11,164 soldados se hallan en las Islas Filipinas. La mortandad del ejército se redujo el año pasado de 8.64 á 6.75 por cada 1,000, como efecto del mejoramiento de las medidas sanitarias. El Secretario Bonaparte en su informe recomendó que se aumentase la marina de guerra con dos acorzados de batalla, dos cruceros exploradores, cuatro torpederos y cinco submarinos y cañoneros.

Indicó que la actual necesidad de la marina no es el aumento de buques, sino la sustitución de nuevos y mejorados buques por los muy usados y anticuados. El acorazado (battleship) "Idaho," un gemelo del "Mississippi" de 13,000 toneladas, se botó al agua en Philadelphia el 9 de Diciembre último. La niña pequeña del Gobernador Gooding, de Idaho, bautizó la nave.

Tiro al Blanco Aéreo

Durante los recientes experimentos dirigidos por M. Berteaux, el Ministro de la Guerra francés con el globo dirigible de Lebaudy, se dejaron caer torpedos aéreos con un acierto mortal desde una altura de 400 pies contrablancos de veinte y cinco yardas en cuadro, y se halló que la nave area podia andar de 35 á 40 kilómetros por hora y permanecer en el aire seis horas por lo menos. Se elevó fácilmente hasta una altura de 1,500 yardas, y pudieron los pasajeros tomar fotografías de baterías y tropas, lo cual hubiera sido muy ùtil para el ataque de una ciudad. El motor del globo suministraba una fuerza de cuarenta caballos, y la cubierta ó saco de gas tenia dos espesores de tela de seda, unidas con una capa de caucho liquido, lo cual reducía la pérdida de gas á un 2 por ciento al dia. Se probó también que esa cubierta era tan elástica que no la penetraban las balas, ó que si la penetraban le hacían un agujerito tan pequeño que era casi insignificante el escape de gas, cerrándose enteramente á menudo la herida después de pasar la bala, A una altura de 200 á 500 yardas la artilleria en un carro motor no podía acertar á darle al globo, y bajo todos conceptos se declaró que para las operaciones de una guerra su globo había pasado con buen éxito todas las pruebas y que era una nueva y terrible adquisición bélica.

Los Premios "Nobel"

Los premios "Nobel" por servicios distinguidos en los departamentos de la actividad humana en beneficio del bienestar del hombre fueron conferidos end Stockholm el 10 de Diciembre. El premio en el departmento de ciencias físicas se adjudicó ál Prof. Philip Meyer von Lenard, de la Universidad de Kiel, por sus trabajos sobre los rayos cahodes; en química al Prof. Adolf von Bayer, de la Universidad de Munich, por sus investigaciones, que condujeron al desarrollo de la química orgánica; en medicina al Prof. Robert Koch for sus investigaciones relativas á la tuberculosis; en literature á Henryk Sienkiewicz, el novelista polaco, y por la promoción de la paz á la Baronesa von Suttner, de Austria, que ha tomado una parte eminente en los movimientos en pro de la paz internacional. Cada premio asciende á unos $40,000.

Mojoramientos de la Maquinaria Agrícola

Una de las principales causas del gran desarrollo de la agricultura americana es el gran número de mejoras que se han hecho en los métodos y maquinas agrícolas. Han reducido el trabajo humano requerido para producir una cantidad dada de fruto y cultivar areas dadas de tierra, y á ellas se debe el haber extendido los mercados de cereales nacionales á los mercados del mundo entero, asi como los de algodón y productos de la lechería.

Los primeros colonizadores que vinieron á este pais se establecieron en Jamestown, Va. Pocos instrumentos ó herramientas de labranza tenían. A la verdad, todo lo que tenían era un azadón, un hacha y un zapapico, y con esta habilitación desmontaron la tierra y cultivaron sus primeras cosechas.

Al emprender el estudio de la maquinaria de hacienda, uno de los instrumentos más importantes, y al que más estudios experimentales se le ha dedicado, es el arado. En 1637 no había más que 37 arados en la colonia de la Bahia de Massachusetts, y durante 12 años después del desembarque de los Peregrinos se excavaba el terreno con rudos azadones y zapapicos. Cuando se introdujo el uso de los arados fué costumbre por muchos años que el que poseía un arado arase las tierras de toda la población, y las municipalidades, "towns," como se llamaban, se hacían cargo de conservar en buen estado los arados, y daban un premio á los que poseían uno.

Aquellos antiguos arados eran pictorescos, según la descripcion que se ha hecho de ellos y de su trabajo. El que se conocia por el nombre del "arado de la antigua colonia" tenía diez pies de largo, una vertedera de cuatro pies, y los surcos que hacia presentaban la apariencia del costillar de un caballo flaco. Se requeria de ocho á diez bueyes para tirar de él, un hombre para dirigirlo, y otro que lo seguía con un azadón para excavar los lugares que no había tocado el arado.

La primera patente expedida fué para un arado de hierro colado. Ese se fabricaba con el botatierra, reja y vertedera en una sola pieza; pero no se popularizó y no fué aceptado por los hacendados, porque, como decían, envenenaba la tierra y hacía crecer las malas yerbas.

Thomas Jefferson escribió en 1798 un tratado sobre el arado en el cual expuso los resultados de sus estudios sobre la curvatura de la vertedera para diminuir la fricción, haciendo, sin embargo, un buen surco. Se dice que se requirieron 45 años de ingeniosos trabajos y experimentos para que llegasen los hacendados á ponerse de acuerdo sobre la mejor forma para el arado.

El arado resfriado "Oliver" de 1870 fué uno de los primeros arados adecuados que se fabricaron, y fué seguido más tarde por los arados "Sulky," los arados de reja múltiple, los arados combinados con rastra, los arados para falda de colina, los arados para remolacha, los arados de disco, y por último los arados de reja múltiple combinados con sembradora y rastra.

Como resultado de esos mejoramientos del arado, hablando solamente de los más recientes, el costo de producción del trigo se ha reducido de cuatro centavos á un centavo el "bushel." El tiempo requerido con el trabajo humano para producir un "bushel" de trigo se ha reducido de 32.8 minutos á 2.2 minutos, y el trabajo animal se ha reducido de 57 minutos á 1½ minutos.

Otra serie de instrumentos para perfeccionar los cuales se han requerido largos años de difíciles trabajos son las agavilladoras, incluyendo las máquinas de segar. El hacendado no tiene ya que cortar sus mieses con la hoz, ni que sacudirlas, rastrillarlas y agavillarlas con las manos sino que toda la operación de cortarlas, rastrallarlas y ensacar el grano se hace mecánicamente y á la vez. Ni se tiene tampoco que cortar la yerba con la guadaña, rastrillarla á mano, cargarla y descargarla á mano, sino que con maquinaria se corta, se rastrilla, se carga y se descarga, sin la cantidad de trabajo de mano que antes se requeria.

El antiguo método de cosechar el grano á mano era demasiado lento paira los americanos, y en 1833 Hussey, de Cincinnati, Ohio, recibió una patente por una Segadora que tuvo buen éxito. El uso de esa máquina se introdujo en los Estados de Nueva York é Illinois en 1834; en Missouri en 1835, y en Pennsylvania en 1837. Aquella máquina fué seguida por la de McCormick en 1834, pero ninguna se hizo popular hasta el año de 1845. Ese año se fabricaron 150 en Cincinnati, y 300 más el año siguiente.

Todas las segadoras se sometieron á una prueba general en Ginebra en 1852, y otra prueba tuvo lugar en la Exposición francesa de 1855. Para la última prueba entraron á competir una máquina inglesa, una francesa y una americana, y el resultado fué un decidido triunfo para le máquina americana.

En todas las máquina construidas hasta entonces se dejaba el grano en el suelo; pero en 1856 obtuvo Yost una patente por una agavilladora de cuerdas que hacia funcionar un operador. A ésta se siguieron otras muchas agavilladoras, algunas de las cuales ataban el grano con cuerda, otras con alambre, y una con la yerba.

El buen éxito de las agavilladoras automáticas dependia del anudador, sólo dos de los cuales obtuvieron un buen éxito, una inventada por Waltler A. Wood, y la otra por Appleby, conocida por el nombre de la Agaviladora "Appleby."

La agavilladora automática fué seguida por la descabezadora, máquina que sólo corta las cabezas del grano, y ésta por la máquina que corta, rastrilla y ensaca el grano, usada con caballos ó con máquina de tracción, y que se empuja en vez de tirarse de ella. Cuando se usa con caballos requiere de 30 á 36 de estos animales y siega de 60 á 125 acres, ó de 1,700 á 3,000 "bushels" al día.

La guadañadora se desarrolló al par que la segadora; á la verdad, por muchos años constituyeron una sola máquina, y la máquina de Hussey fué la verdadera base de la guadañadora.

La primera guadañadora práctica fué fabricada por William Ketcham, y fué más tarde, en 1856, seguida por una fabricada por Lewis Miller. Esa máquina contenia todos los principios de las máquinas más eficientes del dia, pues nuestra presente máquina no es más que un desarrollo perfeccionado de ese tipo.

La cosechadora de maiz es otra máquina que ha representado un papel muy importante, particularmente en las regiones maiceras. Esa máquina no necesita descripción, pues todas sus mejoras se han efectuado durante los últimos pocos años, y han sido presenciadas por todos.

El antiguo método de cortar el maiz con el cuchillo fué seguido por las rastra cortadora, y ésta por la agavilladora, y la agavilladora es hoy reemplazada por la máquina que corta y hacina el maiz.

Otra cosa muy importante se ha desarrollado en los métodos de sembrar el maiz. Al principio se echaban los granos de maiz con la mano en el surco, y se cubrían con el azadón. Más tarde se hacian los surcos, es echaba en ellos el grano, y se cubría con un ligero arado de pala. Este fué reemplazado por un arado de doble pala. Por este método una pala corría á cada lado del surco y le echaba la tierra al maiz. Estos métodos fueron seguidos por el "jobber," más tarde por la sembradora de un caballo, que sembraba una ringlera á la vez.

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La fabricación de torres de acero para llevar los tanques á cierta elevación hace tiempo que constituye uno de los principales ramos de su industria fabril, y recientemente ha obligado á la compañia á aumentar sus facilidades para subvenir á la creciente demanda de estos productos. En conección con la fuerza de los molinos de viento fabrica esa compañía una serie de moledoras de pienso, desgranadoras de maiz, aserraderos de maderas, etc., diseñándose dichos aparatos con el objeto especial de obtener la mayor eficiencia con el menor gasto de fuerza motriz.

Al ir á la prensa este número de nuestras revista se stán fabricando y casi acabándose nuevos edificios, y este nuevo año hallará la compañia mejor equipada que nunca para servir á sus parroquianos con prontitud y eficacia. Toda la correspondencia se le deberá dirigir á Batavia, Ill., U. S. A., donde será atendida en un departamento especial recientemente organizado con este fin. Se contestará con prontitud á todas las preguntas, y se facilitarán las operaciones con la mayor atención y exactitud.

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En algún punto de casi todas las manzanas se encuentra con un gigantesco esqueleto de acero para un edificio toca-cielo (sky-scraper) y en esos edificios funcionan sin cesar los taladros y remachadores neumáticos. Algunas de esas maquinas trabajan á tal altura, que las particulas infinitesimales de acero desprendidas vuelan con el viento á distancias increibles, colándose no infrecuentemente en los ojos de los transeuntes ó de los animales.

"Yo he tenido que operar á unos veinte pacientes de semejante accidente durante la última semana," dijo un oculista de la parte baja de la ciudad. "Apenas pude comprender al principio la causa de esto. Ellos venian aqui con los ojos inyectados de sangre y sufriendo intenso dolar, pero yo no podia hallar el cuerpo ó sustancia que producia semejajnte irritación. En algunos de esos casos el interior del párpado aparecia cortado en cruz como con una cuchilla. Al fin, examinándolo con un lente de aumento descubrí una imperceptible partícula de acero, y desde entonces hallé que eran casos muy fáciles de curar. La acción de esas esas máquinas neumáticas llena el de partícu las de acero imperceptibles, algunas tan diminutas que sólo con un vidrio de aumento se pueden ver, pero que cortan como una chispa de diamante.

Instrumentos Agrícolas Americanos Modelos

Queremos llamar la atención especial de nuestros lectores sobre el anuncio de la "Ohio Cultivator Co.," de Bellevue, O., U. S. A., que aparece en otra página de este número.

Es con orgullo que nombramos á la Ohio Cultivator Co. en la lista de nuestros anunciadores corrientes, y á juzgar por el pasado, la demanda popular de sus productos le ha creado su actual prosperidad mercantil, la cual es bien merecida, y por la honradez é integridad de esa compañía no podemos hacer menos que predecirle grandes negocios en lo futuro. Nos complacemos en ponderar los méritos de sus productos, sabiendo por experiencia personal que son hombres que cumplen su palabra.

Podemos recomendar cordialmente la Ohio Cultivator Co. á cualquiera de nuestros lectores que necesiten algunos de sus productos, convencidos de poder asegurarles de la rectitud y equidad del trato que les ha granjeado una alta reputación á esa firma.

La Cuestión de la Fuerza Motriz

La cuestión de obtener una fuerza motriz satisfactoria y adecuada para trabajos de varias clases es una que hay que decidir á menudo. Es muy importante para el comprador, que tal vez se halla á una gran distancia de un centro proveedor ó mecánicos expertos, el instalar una fuerza motriz que reuna la mayor sencillez, seguridad, fortaleza y duración.

EXPORT IMPLEMENT AGE

NUR FÜR'S AUSLAND BESTIMMT.

Ein unabhängiges Blatt, das ausschliesslich dem Exporthandel in landwirtschaftlichen Maschinen, Pumpen, Windmotoren und sämmtlichen Artikeln der Land- und Milchwirtschaft gewidmet ist.

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Im Firmenverzeichnis für Käufer das im ersten Theil dieses Blattes wiedergegeben ist, werden unsere geehrten Leser die betreffenden Waarenartikel in deutscher Sprache wiedergegeben finden. Es geschieht dies um ihnen die Möglichkeit zu geben, mit unseren Inserenten leichter korrespondiren zu können.

Wäldereien für Papierzwecke

Bis zum Jahre 1800 wurde Papier mit der Hand fabrizirt, als die Gebrüder Fourdrinier die Papierfabrikationsmaschine erfanden. Diese Maschine hat ihre heutige Entwickelung durch die eigenen Hände ihrer Originalerfinder zu danken. Papier ist so leicht erhältlich und kann so billig hergestllt werden, dass seine Nützlichkeit in jedem Zweige der Industrie kaum vollständig anerkannt werden dürfte. Denken wir z. B. eine Minute nach und fragen wir uns, was geschehen würde wenn die Papierproduktion eingestellt werden sollte. Es giebt mehrere Sonntags Zeitungen in den Vereinigten Staaten die hundert Tons Papier je für eine Ausgabe verbrauchen, wofür 125 Klafter Holz nöthig wird und wozu gleichfalls sechs Morgen gutgewachsenen Fichtenholzes gefällt werden muss.

Der *Philadelphia Record* stellte einen Versuch an, wie viel Zeit es nehmen dürfte einen lebenden Baum in eine gedruckte Zeitung, fertig für die Expedition, zu gestalten. Da nun der *Record* eine Papierfabrik besass, konnte er leicht diesen Versuch unternehmen: Das Resultat war 22 Stunden.

Maschinen für Geflügelzüchter

Der neue Kleeschneider ist eine Novitätsmaschine die jüngst von der "Silver Mfg. Co.," Salem, Ohio, U. S. A., in den Handel gebracht wurde.

Um dem vielseitigen Verlangen nach einer solchen Maschine Vorschub leisten zu können, wurde sie speziell auch zum Schneiden von Klee, Alfafa, etc.,—zum Füttern von Geflügel so wichtig—eingerichtet. Der Bedarf auf eine solche Maschine ist in jüngster Zeit fühlbar geworden, denn die wissenschaftliche Geflügelzucht lehrt deutlich, dass geschnittenes Futter zur Nothwendigkeit wird, soll das Unternehmen von Erfolg gekrönt sein.

Um ein leichtes Gehen der Maschine zu sichern wurde sie mit einem schweren Schwungrade versehen und wie thatsächlich erwiesen schneidet sie weit schneller als andere Maschinen, die den doppelten Preis dieser kosten.

Eine andere wichtige Eigenschaft in der Konstruktion dieses Kleeschneiders besteht darin, dass seine Schneideplatte gestellt werden kann; der Maschinenwart ist, in Folge dessen, stets im Stande die Schneidevorrichtung in bester Beschaffenheit zu erhalten. Ein anderer Graund warum diese Maschine leichter zu behandeln ist wie jede andere, ist darin zu finden, dass der Hals derselben breiter ist als bei jedem andern Schneider dieser Art; der Klee kann besser ausgebreitet werden und lässt sich somit weit leichter schneiden als von Maschinen mit engem Halse.

Dieser Kleeschneider hat vier achtzöllige solide Mittelspiralmesser und kann ein achtel Zoll lang schneiden; die ganze Länge desselben ist 24 Zoll, die Kastenlänge 18 Zoll, die Kastenlänge am weitesten Ende 10 Zoll, die Kastenbreite am Halse 8 Zoll. In zehn Minuten kann ein Scheffel Klee mit Leichtigkeit hierauf geschnitten werden. Die Maschine kann an einen Kasten oder an eine Bank der Bequemilchkeit des Arbeiters angepasst montirt werden.

Die Fabrikanten machen den Ausfuhrhandel eine Spezialität und sind gerne erbötig event. Anfragen seitens auswärtiger Korrespondenten in jeder Sprache prompt und genau zu beantworten. Die Firma erbittet Korrespondenz und alle diejenigen die sich für diessen Artikel interessiren, belieben ihre Briefe zu adressiren an: The Silver Mfg. Co., Salem, Ohio, U. S. A.

Die Finanzen unsere Landes

Dem letzten Jahresberichte des Schatzamts-Sekretärs zufolge, scheinen die Regierungseinkünfte des letzten Fiskaljahres sich auf 697 Millionen Dollar zu belaufen; ein Defizit also von 23 Millionen Dollar. Die Zolleinnahmen beliefen sich soweit 14 Proz. höher während des letzten Fiskaljahres und überstiegen 5 Proz. die Einnahmen der inneren Steuern. In Folge dessen erwartet der Schatzamtssekretär eine Einnahme von 738 Millionen Dollar für das Fiskaljahr 1906, gegen 746 Millionen Dollar Ausgaben; einen Zukurzschuss von nur acht Millionen Dollar zurücklassend.

Die Nobel Preise

Die Nobel Preise für hervorragende Verdienste auf dem Gebiete verschiedenartiger Thätigkeit zur Wohlfahrt der Menschheit wurden am 10. December in Stockholm vertheilt. Auf dem Gebiete der Physik wurde der Preis Herrn Professor Philip Meyer von Lenard, in der Universität Kiel, für seine Werke über Kathoden-Strahlen (negative Polplatte) zuerkannt. Den Preis in der Chemie erhielt Professor Adolf von Bäyer, Universität München, und zwar für Untersuchungen in der Entwickelung der organischen Chemie und der chemischen Industrien. In der Medizin, Professor Robert Koch, in Berlin, für Forschungen in Verbindung mit der Tuberkulosis. In der Litteratur erhielt ihn der polnische Schriftsteller, Herr Henryk Sienkiewitz. Den Preis für die Erweiterung des Friedens wurde der Barbnin von Suttner, in Oesterreich, zuerkannt, und zwar für ihre langjährige Wirkungsthätigkeit auf dem Gebiete und im Interesse der internationalen Friedensbewegung. Jeder Preis betrug ungefähr 40.000 Dollar.

Armee und Flotte

Dem letzten Berichte des Kriegssekretären Taft zufolge, beträgt heute die Totalstärke unserer regulären Armee 3.750 Offiziere und 56.064 Gemeine, von denen 739 Offiziere und 11.104 Gemeine in den Philippinen Inseln stationirt sind. Im letzten Jahre wurde die Todesrate von 8.64 Proz. auf 6.75 Proz. per 1000 durch verschärfte gesundheitliche Massnahmen reduzirt. Flottensekretär Bonaparte empfiehlt in seinem Jahresbericht eine weitere Anschaffung von zwei Kriegschiffen. Nicht Vergrössenung, meint er, sei augenblicklich die Hauptfrage, sondern der Austausch neuer verbesserter Schiffe für solche die abgenutzt und bereits veraltet sind. Das Kriegsschiff "Idaho," ein Schwesterschiff der "Mississippi" mit 13.000 Tonnengehalt, wurde letzten December in Philadelphia von Stapel gelassen. Die kleine Tochter Gouverneur Goodings, von Idaho, taufte das Schiff.

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Chicago está experimentando una fase de esta edad de acero que está causandoles incomodidades y peligro á muchas gentes que usan las calles del distrito mercantil central.

En algún punto de casi todas las manzanas se encuentra con un gigantesco esqueleto de acero para un edificio toca-cielo (sky-scraper) y en esos edificios funcionan sin cesar los taladros y remachadores neumáticos. Algunas de esas maquinas trabajan á tal altura, que las partículas infinitesimales de acero desprendidas vuelan con el viento á distancias increibles, colándose no infrecuentemente en los ojos de los transeuntes ó de los animales.

"Yo he tenido que operar á unos veinte pacientes de semejante accidente durante la última semana," dijo un oculista de la parte baja de la ciudad. "Apenas pude comprender al principio la causa de esto. Ellos venian aquí con los ojos inyectados de sangre y sufriendo intenso dolar, pero yo no podia hallar el cuerpo ó sustancia que producia semejajnte irritación. En algunos de esos casos el interior del párpado aparecía cortado en cruz como con una cuchilla. Al fin, examinándolo con un lente de aumento descubrí una imperceptible partícula de acero, y desde entonces hallé que eran casos muy fáciles de curar. La acción de esas esas maquinas neumaticas llena el de particulas de acero imperceptibles, algunas tan diminutas que sólo con un vidrio de aumento se pueden ver, pero que cortan como una chispa de diamante.

Instrumentos Agrícolas Americanos Modelos

Queremos llamar la atención especial de nuestros lectores sobre el anuncio de la "Ohio Cultivator Co.," de Bellevue, O., U. S. A., que aparece en otra página de este número.

Es con orgullo que nombramos á la Ohio Cultivator Co. en la lista de nuestros anunciadores corrientes, y á juzgar por el pasado, la demanda popular de sus productos le ha creado su actual prosperidad mercantil, la cual es bien merecida, y por la honradez é integridad de esa compañia no podemos hacer menos que predecirle grandes negocios en lo futuro. Nos complacemos en ponderar los méritos de sus productos, sabiendo por experiencia personal que son hombres que cumplen su palabra.

Podemos recomendar cordialmente la Ohio Cultivator Co. á cualquiera de nuestros lectores que necesiten algunos de sus productos, convencidos de poder asegurarles de la rectitud y equidad del trato que les ha granjeado una alta reputación á esa firma.

La Cuestión de la Fuerza Motriz

La cuestión de obtener una fuerza motriz satisfactoria y adecuada para trabajos de varias clases es una que hay que decidir á menudo. Es muy importante para el comprador, que tal vez se halla á una gran distancia de un centro proveedor ó mecánicos expertos, el instalar una fuerza motriz que reuna la mayor sencillez, seguridad, fortaleza y duración.

EXPORT IMPLEMENT AGE

NUR FÜR'S AUSLAND BESTIMMT.

Ein unabhängiges Blatt, das ausschliesslich dem Exporthandel in landwirtschaftlichen Maschinen, Pumpen, Windmotoren und sämmtlichen Artikeln der Land- und Milchwirtschaft gewidmet ist.

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Im Firmenverzeichnis für Käufer das im ersten Theil dieses Blattes wiedergegeben ist, werden unsere geehrten Leser die betreffenden Waarenartikel in deutscher Sprache wiedergegeben finden. Es geschieht dies um ihnen die Möglichkeit zu geben, mit unseren Inserenten leichter korrespondiren zu können.

Wäldereien für Papierzwecke

Bis zum Jahre 1800 wurde Papier mit der Hand fabrizirt, als die Gebrüder Fourdrinier die Papierfabrikationsmaschine erfanden. Diese Maschine hat ihre heutige Entwickelung durch die eigenen Hände ihrer Originalerfinder zu danken. Papier ist so leicht erhältlich und kann so billig hergestllt werden, dass seine Nützlichkeit in jedem Zweige der Industrie kaum vollständig anerkannt werden dürfte. Denken wir z. B. eine Minute nach und fragen wir uns, was geschehen würde wenn die Papierproduktion eingestellt werden sollte. Es giebt mehrere Sonntags Zeitungen in den Vereinigten Staaten die hundert Tons Papier je für eine Ausgabe verbrauchen, wofür 125 Klafter Holz nöthig wird und wozu gleichfalls sechs Morgen gutgewachsenen Fichtenholzes gefällt werden muss.

Der *Philadelphia Record* stellte einen Versuch an, wie viel Zeit es nehmen dürfte einen lebenden Baum in eine gedruckte Zeitung, fertig für die Expedition, zu gestalten. Da nun der *Record* eine Papierfabrik besass, konnte er leicht diesen Versuch unternehmen: Das Resultat war 22 Stunden.

Maschinen für Geflügelzüchter

Der neue Kleeschneider ist eine Novitätsmaschine die jüngst von der "Silver Mfg. Co.," Salem, Ohio, U. S. A., in den Handel gebracht wurde.

Um dem vielseitigen Verlangen nach einer solchen Maschine Vorschub leisten zu können, wurde sie speziell auch zum Schneiden von Klee, Alfafa, etc.,—zum Füttern von Geflügel so wichtig—eingerichtet. Der Bedarf auf eine solche Maschine ist in jüngster Zeit fühlbar geworden, denn die wissenschaftliche Geflügelzucht lehrt deutlich, dass geschnittenes Futter zur Nothwendigkeit wird, soll das Unternehmen von Erfolg gekrönt sein.

Um ein leichtes Gehen der Maschine zu sichern wurde sie mit einem schweren Schwungrade versehen und wie thatsächlich erwiesen schneidet sie weit schneller als andere Maschinen, die den doppelten Preis dieser kosten.

Eine andere wichtige Eigenschaft in der Konstruktion dieses Kleeschneiders besteht darin, dass seine Schneideplatte gestellt werden kann; der Maschinenwart ist, in Folge dessen, stets im Stande die Schneidevorrichtung in bester Beschaffenheit zu erhalten. Ein anderer Graund warum diese Maschine leichter zu behandeln ist wie jede andere, ist darin zu finden, dass der Hals derselben breiter ist als bei jedem andern Schneider dieser Art: der Klee kann besser ausgebreitet werden und lässt sich somit weit leichter schneiden als von Maschinen mit engem Halse.

Dieser Kleeschneider hat vier achtzöllige solide Mittelspiralmesser und kann ein achtel Zoll lang schneiden; die ganze Länge desselben ist 24 Zoll, die Kastenlänge 18 Zoll, die Kastenlänge am weitesten Ende 10 Zoll, die Kastenbreite am Halse 8 Zoll. In zehn Minuten kann ein Scheffel Klee mit Leichtigkeit hierauf geschnitten werden. Die Maschine kann an einen Kasten oder an eine Bank der Bequemlichkeit des Arbeiters angepasst montirt werden.

Die Fabrikanten machen den Ausfuhrhandel eine Spezialität und sind gerne erbötig event. Anfragen seitens auswärtiger Korrespondenten in jeder Sprache prompt und genau zu beantworten. Die Firma erbittet Korrespondenz und alle diejenigen die sich für diessen Artikel interessiren, belieben ihre Briefe zu adressiren an: The Silver Mfg. Co., Salem, Ohio, U. S. A.

Die Finanzen unsere Landes

Dem letzten Jahresberichte des Schatzamts-Sekretärs zufolge, scheinen die Regierungseinkünfte des letzten Fiskaljahres sich auf 697 Millionen Dollar zu belaufen; ein Defizit also von 23 Millionen Dollar. Die Zolleinnahmen beliefen sich soweit 14 Proz. höher während des letzten Fiskaljahres und überstiegen 5 Proz. die Einnahmen der inneren Steuern. In Folge dessen erwartet der Schatzamtssekretär eine Einnahme von 738 Millionen Dollar für das Fiskaljahr 1906, gegen 746 Millionen Dollar Ausgaben; einen Zukurzschuss von nur acht Millionen Dollar zurücklassend.

Die Nobel Preise

Die Nobel Preise für hervorragende Verdienste auf dem Gebiete verschiedenartiger Thätigkeit zur Wohlfahrt der Menschheit wurden am 10. December in Stockholm vertheilt. Auf dem Gebiete der Physik wurde der Preis Herrn Professor Philip Meyer von Lenard, in der Universität Kiel, für seine Werke über Kathoden-Strahlen (negative Polplatte) zuerkannt. Den Preis in der Chemie erhielt Professor Adolf von Bäyer, Universität München, und zwar für Untersuchungen in der Entwickelung der organischen Chemie und der chemischen Industrien. In der Medizin, Professor Robert Koch, in Berlin, für Forschungen in Verbindung mit der Tuberkulosis. In der Litteratur erhielt ihn der polnische Schriftsteller, Herr Henryk Sienkiewitz. Den Preis für die Erweiterung des Friedens wurde der Baronin von Suttner, in Oesterreich, zuerkannt, und zwar für ihre langjährige Wirkungsthätigkeit auf dem Gebiete und im Interesse der internationalen Friedensbewegung. Jeder Preis betrug ungefähr 40.000 Dollar.

Armee und Flotte

Dem letzten Berichte des Kriegssekretären Taft zufolge, beträgt heute die Totalstärke unserer regulären Armee 3.750 Offiziere und 56.064 Gemeine, von denen 739 Offiziere und 11.104 Gemeine in den Philippinen Inseln stationirt sind. Im letzten Jahre wurde die Todesrate von 8.64 Proz. auf 6.75 Proz. per 1000 durch verschärfte gesundheitliche Massnahmen reduzirt. Flottensekretär Bonaparte empfiehlt in seinem Jahresbericht eine weitere Anschaffung von zwei Kriegschiffen. Nicht Vergrössenung, meint er, sei augenblicklich die Hauptfrage, sondern der Austausch neuer verbesserter Schiffe für solche die abgenutzt und bereits veraltet sind. Das Kriegsschiff "Idaho," ein Schwesterschiff der "Mississippi" mit 13.000 Tonnengehalt, wurde letzten December in Philadelphia von Stapel gelassen. Die kleine Tochter Gouverneur Goodings, von Idaho, taufte das Schiff.

INTENTIONAL SECOND EXPOSURE

Die Evolution in landwirthschaftlichen Maschinen

Die ganze Evolution—die Revolution vielmehr—in landwirthschaftlichen Maschinen hat innerhalb des letzten Jahrhunderts stattgefunden. Vor hundert Jahren waren landwirthschaftliche Geräthe fast ebenso primitiv als sie vor tausend Jahren waren. Die Wiegensichel z. B. ist nur etwas über hundert Jahre alt und der Gusseisen Pflug kam erst elf Jahre später in den Gebrauch; heute haben wir Dampffpflüge, Kombinations- Ernte- und Dreschmaschinen und Selbstmäher und obgleich diese Maschinen nur auf den Riesenfarmen des Westens ausschliesslich gebraucht werden, wo doch das meiste Korn bei uns gezogen wird, ist die Anwendung derselben so neu, dass der geringste Theil der Bevölkerung sie je zu Augesicht bekommen hat. Und doch verändern diese Maschinen unsere Lebenweise in allen Phasen—befreien den Landmann von seiner einförmigen Handarbeit, machen uns zu den wichtigsten Exporteuren, ja mehr als das, sie ändern die unsterbliche Idee der Landwirthschaft und die ländlichen und idyllischen Verbindungen die seit den Tagen Abrahams damit verknüpft waren. In keiner anderen Erfindungslinie ist der Fortschritt schneller oder hervortretender gewesen. Eines der auffallendsten Objekte der letzten Weltausstellung in St. Louis war der Holzpflug der von Daniel Webster auf seines Vaters Farm gebraucht wurde, neben einem modernen achtreihigen Dampfpflug.

Alle grossen Ernten werden heute mit Maschinen gesät und Alles, ausser Baumwolle, mit der Maschine geerntet. Nicht länger trabt der Bauer mühselig langsam und verstört über sein Feld hin und zurück. Er fährt auf seinen Hügelpflug und sitzt auf einem Federsitz. Es giebt besondere Pflüge für jedweden Bedarf: Torfpflüge, Stuppelpflüge, Untergrundpflüge, Pflüge für schwere Arbeit, Pflüge für leichte; dann der Pflug mit diversen Pflügscharen, der drei Reihen auf einmal bearbeiten kann. Das Pflügen mit Dampf ist auf den grossen Ranchen an der pacifischen Küste nichts Neues. Auf dem Fruchtboden Kaliforniens ist es eine Alltagssache eine Traktionsmaschine von sechzig Pferdekräften zu sehen, die 21 Fuss Scheibenpflüge ziehen und den Boden zehn Zoll tief durchbrechen. Diese Maschinen leisten 60 Morgen täglich. Die Streichbrettpflüge, die eigens für diesen Zweck angefertigt sind, kann man eine Streke von 28 Fuss breit auf einmal durchbrechen sehen. Das will so viel heissen, dass ein Mann mit einem Streichbrettpflug welcher an zwei Pferden angespannt ist, achtundzwanzig Mal sein Pferd durchkreuzen muss um genau dieselbe Arbeit zu verrichten, die von der Traktionsmaschine auf einmal mit ihren Pflügen bewerkstelligt werden kann. Ein Landwirth im Central-Westen der eine kleine Traktionsmaschine und ein Assortiment von vier vierzehnzölligen Pflügen besitzt, sagt es koste ihm blos 50 bis 52 Cent per Morgen, um seinen Farmgrund zu durchbrechen. Er glaubt dass Dampf billiger sei.

Nachdem das Pflügen beendet ist, ersetzt der Düngerausbreiter die Handgabel plus Rückenschmerzen. Während der Bauer hin und zurück mit seinem Pferdegespann über seine Felder dahinfährt, breitet die Fertilisirmaschine mechanisch den Dünger vom hinteren Theile des Wagens gleichmässig aus. Grosse Oekonomie wird durch die Benutzung dieser Maschine hervorgerufen, denn sie arbeitet gleichmässiger als mit der Hand, ganz abgesehen von der Arbeitsersparung die dadurch hervorgerufen wird.

Sobald der Boden zum Empang des Samens fertig ist, nimmt die Maschine wieder die Stelle der Muskel ein. Die Säemaschine fängt nun zu säen an, doch nicht wie in früheren Zeiten, mühselig den Samen in den Erdboden werfend, hin und herlaufend, vom frühen Morgen bis zum späten Abend. Der Samen wird durch die Maschine breitgeworfen und gleichzeitig gerillt; es registrirt auch die Zahl der gesäeten Morgen. In gleicher Weise wird auch das Mais zugerillt, in Hügel zusammengeworfen oder verpflanzt; Kartoffeln werden genau so gepflanzt, ja selbst Kohl und Blumenkohl wie auch Tabackpflanzen werden durch Beihülfe mechanischer Vorrichtungen heute erzeugt.

Prompt nach dem Pflanzen der Ernte erscheint das Unkraut. Unkraut war früher mit der Haue, mit Handblasen, mit ermüdeten Rücken und anhaltendem Kampf gleichbedeutend. Heute hat nur der Landmann zwischen der Auswahl vieler Maschinen, die für diesen Zweck gebaut werden, zu wählen.

Doch nicht früher als bis wir zur Erntezeit kommen werden wir des grössten Wunders auf dem Gebiete menschlicher Erfindungsgabe gewahr. Von Pferden zezogen schneidet der Selbstbinder einen acht Fuss langen Schwaden über's Feld, sammelt es mechanisch auf und bindet es gleichzeitig in Bündel; so ein Köpfer vorgezogen wird, ist es ein Leichtes die Köpfe des Getreides rein abzumähen und sie wie mit einem Sturmwind durch eine Röhre in einen Wagen, der stets in Bereitschaft steht, hineinzubeförden. Ein Anblick von ungewöhnlichem Interesse fürs Auge bildet unzweifelhaft die Kombinations Ernte- und Dreschmaschine, die auf den grossen Getreideseen Kaliforniens jetzt gebraucht werden. Die reifen Felder scheinen sich vom Horizont zu Horizont zu erstrecken. Wo denn giebt es Erntemaschinen solche Ernten aufzuspeichern? Nach den Methoden der kleinen Landgüter zu urtheilen, scheint wahrlich das Ernteproblem ungefähr dasselbe als ob man die Grossen Seen mit einer kleinen Schaufel ausleeren wollte. Das Getreide fällt in einen grossen Schwaden an der einen Seite und schmilzt bereits vor dem Herannahen der Maschine. An der anderen Seite fallen, mit genau derselben Regelmässigkeit, die Getreidesäcke herab welche fertig zubereitet sind, zum Müller geschickt werden zu können. Der Warte der der Maschine mit seinem Wagen folgt, hebt einen Sack voll Getreide, frisch gedroschen und gereinigt, in seinen Wagen von der Stelle, wo vor kaum fünf Minuten die Getreideähren noch blühend im Sonnenschein sich weideten.

Mit grösstem Nutzen kann die Kombinations Dresch- und Erntemaschine auf gleichmässigen Ebenen gebraucht werden; doch sind auch besondere Hügelpflüge jetzt konstruirt worden die vortrefflich nach ihrer Perfektion für Bergland verwendet werden können; dieselben folgen nämlich woimmer der grosse Pflug leitet. In vielen Gegenden werden Pferde und Esel gebraucht wo Dampf nicht zur Anwendung kommen kann. Diese Riesenmaschine die einen 22 Fuss langen Aehrenschneider hat, kann täglich vierzig Morgen schneiden, dreschen und in Säcke verpacken. Es bedarf hierzu einer Bedienung von nur vier Mann—einen Lenker, einen Schneidewarten, einen Absonderer und einen Sacknäher. Die Kosten für das Schneiden und Dreschen belaufen sich gewöhnlich auf 1 Dollar 25 Cent den Morgen.

Während einiger Jahre ist in Kalifornien die allergrösste Kombinationserntemaschine der Welt im Betriebe. Dieselbe besteht aus einer Traktionsmaschine welche 75 Tons ziehen kann und somit den Platz von sechzig Pferdekräften einnimmt. Der daran befestigte Mäher schneiden eine Aehrenlänge von 36 Fuss und ist ausserdem mit einer kompletten Dreschmaschine verbunden. Die Fahrräder dieses Monstrums sind acht Fuss im Durchschnitt mit Reifen 48 Zoll breit an welchen Ränder anderthalb Zoll hoch sind. Bei gutem Getreide legt diese Maschine dreieinhalb Meilen die Stunde zurück und hat eine Leistunsfähigkeit von hundert Morgen pro Tag. Acht Leute müssen an der Maschine beschäftigt werden. Sie arbeitet unverändert gut sowohl auf dem Flachlande wie auch auf hügeligem Boden, denn sie besitzt Kraft genug einen 20 Proz. Grad ohne Schwierigkeit zu Machen. Ihre Länge ist 66 Fuss, ist halb so breit und wiegt mehr als hundert Tons. Sie wird mit Oel geheizt. Die zur Herstellung eines Scheffel Weizens erforderliche Prozedur beträgt durchschnittlich an menschlicher Arbeit von Anfang bis zu Ende zehn Minuten, und die Arbeits- Kosten belaufen sich auf ein drittel Cent. Wie Männer sich aus ihrer Knabenzeit noch erinnern werden, bedeutete ein Scheffel Weizen s. Z. drei Stunden und drei Minuten Arbeit und kostete achtzehn Cent. Und vor dem Bürgerkriege bedeutete ein Scheffel Weizen noch mehr als viereinhalb Stunden Menschenarbeit und kostete etwas über 35 Cent; heute kann in einer Arbeitszeit von 41 Minuten dasselbe für nur zehn Cent geleistet werden. Die thatsächliche Geldersparnis, ganz abgesehen von der Zeit- und Kraftanwendung, wird dadurch eine ganz enorme.

Die Getreidemaschine verrichtet in grossen Getreidekoppeln eben das was die Mähmaschine auf den Heugefielden leistet. Sie schneidet das Korn, bindet es in Garben auf und stellt es in Reihen von je fünf Garben so schnell aneinander, wie es ein Mann kaum thun kann. Ein weiterer Fortschritt bedeutet der Getreide-Garbenaufbinder der das aufrechtstehende Getreide erst schneidet und es dann, vermittelst eines sich senkrecht bewegenden Stabes und sich drehenden Tisches in perfekte Garben bildet welche, nach dem Binden, von einer Hebe aufgewunden und an jeden beliebigen Ort gesetzt werden konnen. Ein Mann und ein paar Pferde leisten mehr als zwei oder mehr Arbeiter es thun. Nach den allerneuesten Vorrichtungen in landwirthschaftlichen Geräthen kann Mais auf einmal gepflückt und enthülst werden. Direkt vom Wagen wird das Mais am Halm in den Enthülser gespeist. Vermittelst konischer Rollen werden die Achren abgeqflückt und dann enthülst. Die Halme werden zertheilt und mit den Hülsen auf ein sich überbiegendes Sieb geworfen, welches diejenigen Körner entfernt die bereits zerkleinert worden sind. Die Fütterung wird weiter zu einem Fächer hinaufgeleitet und dann durch eine Röhre, vermittelst Blasevorrichtung, in die Mähmaschine hineingeleitet. Die Leistungsfähigkeit dieser Maschine beträgt dreissig Scheffel enthülsten Korns die Stunde. Nicht allein wird Zeit und Arbeit durch den Gebrauch dieser Maschine gespart, das erzeugte Produkt erhält sogar neuen Speisewerth; doch das verdanken wir dem Zerkleinerungsapparate. Die einst fast werthlosen Halme werden als nahrhaftes Futter heute brauchbar gemacht, das dem Vieh sehr schmeckt. Ja, sogar noch in der letzten Stufe, ehe das Korn zum Müller gebracht wird, finden wird den Gebrauch einer Maschine. Der Dampfenthülser enthülst einen Scheffel Getreide die Minute, während in alten Tagen, nach alten Methoden, hundert mal so viel Zeit dafür erforderlich war. Es wurde ausgerechnet, dass die ganze Bevölkerung der Vereinigten Staaten hundert Tage lang, nach der alten Handmethode, würde enthülsen müssen, um die jährlich erforderliche Ernte für dieses Land zu beschaffen.

Ein ähnlicher Fortschritt fast ist mit Kleientülsern, Bohnenseparatoren, u. s. w. gemacht worden. Jeder kennt die Mähmaschine, den Heu und Pferderechen, die heute in der Heuindustrie gebraucht werden. Diesen gesellt sich jetzt der Heuauffänger und der von Pferden gezogene Heuaufstapler zu, sowie eine Presse, die ebenfalls durch Pferdekraft arbeitet. Es dauerte früher fünfunddreissig einhalb Stunden um eine Tonne Heu mit der Hand zu ernten und zu pressen; mit modernen Maschinen dauert es elfeinhalf Stunden. Die allergrösste Ersparnis liegt im Schneiden und Trocknen der Ernte das mit der Hand elf Stunden dauert, mit der Maschine aber nur eine Stunde neunundreissig Minuten.

Aber auch in den geringeren Industrien der Landwirthschaft spielt das Maschinenwesen nicht eine kleinere Rolle. Die Henne fühlt sich vom Inkubator oder der Brutmaschine verdrängt. Der Abrahmer hat die frühern Milchpfannen in der Meierei ersetzt; der Windmotor pumpt Wasser für die Kühe. Statt des Abreibebesens und dem Medizineimer verrichten Spreemaschinen oder Ausspritzer von Pferden gezogen die Arbeit der Vernichtung der Kartoffelkäfer. Eine Schermaschine wird auf den westlichen grossen Schafrauchen mit grossem Erfolg angewendet. Selbst die Kuh wird nicht ungeschont bleiben, denn die Melkmaschinen fangen jetzt an mehr und mehr beliebt zu werden.

In den Nebenarbeiten auf dem Hofe scheint die Maschine einen wichtigen Faktor zu spielen. Die Gasolinmaschine liefert in vortheilhaftester Weise Kraft und fängt schnell an die Handarbeit in vieler Hinsicht zu verdrängen. Sie malt Knochenmehl für das Geflügel und Futter für das Vieh. Sie sägt das Holz für den Jahresvorrath. Jüngst wurde sie sogar zum Betriebe der Mähmaschinen verwandt. Vermittelst eines vorne angebrachten Steuerrades arbeitet dieser Apparat nahe dem aufrechtstehenden Grase und soll seine Leistung gar vortrefflich sein. In vielen grossen Stadtparks werden viele Selbstmähmaschinen grösserer Dimension angewendet. Der weiche Farmboden hat es so weit verhindert grösserer Gebrauch von dem Motormaschinen wie es bis jetzt der Fall war zu machen; in Landestheilen aber wo fester Boden ist spielt sie eine bedeutende Rolle besonders in gewissen fruchtziehenden Landestheilen wo sie alle Produkte zu Markte befördert.

Es ist ausgerechnet worden, dass das Geld das hierzulande in Geräthen und landwirthschaftlichen Maschinen angelegt ist, sich auf über 200 Millionen Dollar beläuft. Bein Ausbruch des Bürgerkrieges präsentirte die Totalindustrie kaum dreienhalb Millionen Dollar. Die jährlichen Materialskosten zur Anfertigung dieser Maschinen belaufen sich allein auf vierzig Millionen Dollar. Der Werth der jährlichen Produkte ist weit über hundert Millionen Dollar. Die Vereinigten Staaten von Nord Amerika stehen an der Spitze der landwirthschaftliche Maschinen fabrizirenden Länder und der Staat Illinois besonders leitet die Fabrikation vieler Geräthe, besonders in Erntemaschinen. In Chicago allein ist über 20 Proz. des Totalbetrages dieser Landesindustrie angelegt. Es baut mehr theuere und komplizirte Maschinen dieser Art, wie z. B. die Kombinationsernte-Maschinen die Binde- und Erntemaschinen, wie alle anderen Staaten zusammen. Die ungeheueren Getreide produzirenden Staaten liefern in gar vielen Fällen die wenigsten Maschinen, die allein sie heute so hervorragend auszeichnen.

Maschinerie hat die Landwirthschaft des Westens in einer Hinsicht und die des Ostens in anderer Weise total ungewälzt. Die nordöstlichen Staaten haben die Landwirthschaft ungemein gehoben und sie intensive gemacht—die Prärie- und Pacific Staaten hingegen haben sie ausgedehnt, erweitert. New Jersey und Connecticut z. B. haben heute mehr Wirthschaften als vor einem Jahrzehnt, doch weit geringeren Flächeninhalt. Und obgleich die Wirthschaften kleiner wie früher sind, ist ihr Produktenwerth wiederum halb so gross. Die Landwirthe haben aufgehört die grossen Ernten zu ziehen sobald Maschinerie auf den Prärien eingeführt wurde und warfen sich auf den Austauschhandel, wobei sie weit mehr verdienten und viel weniger Flächenraum brauchten. Im Westen, hingegen, erweiterten sich in derselben Periode die Wirthschaften und der Flächenraum an Zahl und Ausdehnung. Maschinerie hat, in der Weise, für beide zwar verscheidene Resultate hervorgerufen, doch auch der Profit ist für beide ein grösserer.

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We have increased our exports to China greatly, but our trade there, in a large sense, is not the result of American endeavor. In fact, the boycott disclosed that our cotton goods were not handled by American houses, but were sold at auction by Germans and Englishmen. A large portion of our increase of exports to China was made up in 1905 of our sale of copper to that empire. In the twelve months ended December, 1903, our exports of copper to China were too insignificant to be enumerated in the tables prepared by the government at Washington. The copper sold to China in that year was included in the amount listed as exports "to all other countries not otherwise enumerated," and that sum was a trifle.

In the year ending December, 1904, we sold over a million dollars' worth of copper to China, and in the past year, because of the great demand in the Chinese empire for copper ingots, bars, and plates for their mints, we sold $11,747,267 worth to the Celestial Empire. The kerosene trade in China has undoubtedly been developed through American enterprise, and this is true of a few other items of merchandise. But the bulk of the business is an outgrowth of China's awakening, and not of any marked alertness on the part of America.

Foreign trade has not, as a business, greatly appealed to the American nation, except in declamation and jubilant statistical reviews. From all parts of the world come complaints that our business men fail to take advantage of opportunities reported by our consuls. One of our consuls in Europe recently complained that American manufacturers, when they reached that continent, spend their time loafing around ruins instead of grasping opportunities. In commenting upon this I said that wealthy American manufacturers go abroad to spend money, not to make it; that they are surfeited with success at home, and rush away to Europe to escape the hurry and turmoil of American triumphs. What they want abroad is variety, and ruins probably supply it.

KNOW HOW TO MAKE MONEY.

The great business world of America does not need to be instructed in the art of how to make money. The reason that it has failed to take advantage of many foreign opportunities is not due to incapacity to learn the ways of trade beyond our borders, but is altogether the outcome of our preoccupation at home. We do not need, at least we have not needed, foreign trade, in any great measure.

The bulk of our exports has consisted of natural products and raw materials. Our oversea exports of manufactures have never been large. If we take from the total figures the amount included in the sale of copper and kerosene abroad, the remainder is pitifully small for a nation like America, whose manufactures in one year amount to $15,000,000,000 in value.

In regard to the effect of the Panama Canal upon our foreign trade and our foreign trade policies, I suggested that much of the optimism would be less pronounced if we studied the condition of our trade with the Atlantic republics of South America. No canal, for example, is necessary for New Orleans and Galveston, Philadelphia, Baltimore, New York and Boston to reach the ports of Pernambuco and Rio de Janeiro.

The foreign trade of the Latin republics on the Atlantic side of the western hemisphere will be found to exceed a billion dollars in value. The foreign trade of Argentina alone, in 1904, was nearly $450,000,000. Inasmuch as our centers of manufacturing industries are in the eastern portion of the United States, and find their foreign outlet at the Atlantic seaboard, the Panama Canal will be of no value in extending our main export trade in manufactures with the Atlantic countries of Central and South America.

WIDE OCEAN AS A TRADE PATH.

Our exports to Brazil have been declining for the past ten years. We have the wide ocean as a trade path to that big republic. Obviously, therefore, an unobstructed waterway will not in itself secure American trade conquests. I said that if the South American continent were turned around, and if the Isthmus of Panama intervened between us and the markets of Brazil, and Uruguay and other lands now on the Atlantic side of that continent, it might reasonably be said that the failure of the United States to secure such markets was due to the absence of a canal at the isthmus.

But no such strip of land shuts us out. The tides that bring traffic to our eastern harbors ebb and flow in the eastern ports of South America. We have failed in that great and growing field largely because we have not needed the commerce of the southern continent. Our trade with Argentina displays some vitality because of the remarkable commercial awakening of that republic, but to Brazil, as I have stated, our exports have declined.

I did not minimize the value of oriental commerce. On the contrary, I cited the totals and the promise of that trade, but I reminded the canal enthusiasts that waterways alone will not necessarily give us the traffic of the far East. The Atlantic, thousands of miles wide, has failed to enable us to reach the markets on the eastern side of South America, and there is no assurance that a canal through the isthmus will become a highway to American triumphs in the Pacific.

OUR COMMERCIAL MOVEMENT.

If by the time the Panama Canal is completed the commercial world of America needs foreign outlet, we shall utilize the isthmian waterway to good purpose, but if the completion of the canal happens to be at a time of prosperity, like the present, it is not likely that it will have any appreciable effect upon our commercial movements. There was large promise that the Philippines were to become the stepping stones to our trade mastery of the Orient, but we have failed even to get the trade of the Philippines.

If we needed a foreign field, we would go down to Brazil, a growing republic, whose area is almost equal to the whole continent of geringeren Flächeninhalt. Und obgleich die Wirthschaften kleiner wie früher sind, ist ihr Produktenwerth wiederum halb so gross. Die Landwirthe haben aufgehört die grossen Ernten zu ziehen sobald Maschinerie auf den Prärien eingeführt wurde und warfen sich auf den Austauschhandel, wobei sie weit mehr verdienten und viel weniger Flächenraum brauchten. Im Westen, hingegen, erweiterten sich in derselben Periode die Wirthschaften und der Flächenraum an Zahl und Ausdehnung. Maschinerie hat, in der Weise, für beide zwar verscheidene Resultate hervorgerufen, doch auch der Profit ist für beide ein grösserer.

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INTENTIONAL SECOND EXPOSURE

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We like to believe in America that our foreign trade has come as the result of intense endeavor. We talk about our commercial invasion of Europe, and we point proudly to our increase of exports to the Orient and there is the picturesque assumption that the Panama Canal is a part of a definite effort at world-mastery on the part of the American nation. It has been pointed out that the Panama Canal would be the trade path, Hawaii the halfway house, and the Philippines the stepping stone to our commercial supremacy in the far East. Yet while we have been building the Panama Canal with a view to getting the commerce of the Orient, we have permitted the anti-American movement in the Chinese empire to gather great force.

We have increased our exports to China greatly, but our trade there, in a large sense, is not the result of American endeavor. In fact, the boycott disclosed that our cotton goods were not handled by American houses, but were sold at auction by Germans and Englishmen. A large portion of our increase of exports to China was made up in 1905 of our sale of copper to that empire. In the twelve months ended December, 1903, our exports of copper to China were too insignificant to be enumerated in the tables prepared by the government at Washington. The copper sold to China in that year was included in the amount listed as exports "to all other countries not otherwise enumerated," and that sum was a trifle.

In the year ending December, 1904, we sold over a million dollars' worth of copper to China, and in the past year, because of the great demand in the Chinese empire for copper ingots, bars, and plates for their mints, we sold $11,747,267 worth to the Celestial Empire. The kerosene trade in China has undoubtedly been developed through American enterprise, and this is true of a few other items of merchandise. But the bulk of the business is an outgrowth of China's awakening, and not of any marked alertness on the part of America.

Foreign trade has not, as a business, greatly appealed to the American nation, except in declamation and jubilant statistical reviews. From all parts of the world come complaints that our business men fail to take advantage of opportunities reported by our consuls. One of our consuls in Europe recently complained that American manufacturers, when they reached that continent, spend their time loafing around ruins instead of grasping opportunities. In commenting upon this I said that wealthy American manufacturers go abroad to spend money, not to make it: that they are surfeited with success at home, and rush away to Europe to escape the hurry and turmoil of American triumphs. What they want abroad is variety, and ruins probably supply it.

KNOW HOW TO MAKE MONEY.

The great business world of America does not need to be instructed in the art of how to make money. The reason that it has failed to take advantage of many foreign opportunities is not due to incapacity to learn the ways of trade beyond our borders, but is altogether the outcome of our preoccupation at home. We do not need, at least we have not needed, foreign trade, in any great measure.

The bulk of our exports has consisted of natural products and raw materials. Our oversea exports of manufactures have never been large. If we take from the total figures the amount included in the sale of copper and kerosene abroad, the remainder is pitifully small for a nation like America, whose manufactures in one year amount to $15,000,000,000 in value.

In regard to the effect of the Panama Canal upon our foreign trade and our foreign trade policies, I suggested that much of the optimism would be less pronounced if we studied the condition of our trade with the Atlantic republics of South America. No canal, for example, is necessary for New Orleans and Galveston, Philadelphia, Baltimore, New York and Boston to reach the ports of Pernambuco and Rio de Janeiro.

The foreign trade of the Latin republics on the Atlantic side of the western hemisphere will be found to exceed a billion dollars in value. The foreign trade of Argentina alone, in 1904, was nearly $450,000,000. Inasmuch as our centers of manufacturing industries are in the eastern portion of the United States, and find their foreign outlet at the Atlantic seaboard, the Panama Canal will be of no value in extending our main export trade in manufactures with the Atlantic countries of Central and South America.

WIDE OCEAN AS A TRADE PATH.

Our exports to Brazil have been declining for the past ten years. We have the wide ocean as a trade path to that big republic. Obviously, therefore, an unobstructed waterway will not in itself secure American trade conquests. I said that if the South American continent were turned around, and if the Isthmus of Panama intervened between us and the markets of Brazil, and Uruguay and other lands now on the Atlantic side of that continent, it might reasonably be said that the failure of the United States to secure such markets was due to the absence of a canal at the isthmus.

But no such strip of land shuts us out. The tides that bring traffic to our eastern harbors ebb and flow in the eastern ports of South America. We have failed in that great and growing field largely because we have not needed the commerce of the southern continent. Our trade with Argentina displays some vitality because of the remarkable commercial awakening of that republic, but to Brazil, as I have stated, our exports have declined.

I did not minimize the value of oriental commerce. On the contrary, I cited the totals and the promise of that trade, but I reminded the canal enthusiasts that waterways alone will not necessarily give us the traffic of the far East. The Atlantic, thousands of miles wide, has failed to enable us to reach the markets on the eastern side of South America, and there is no assurance that a canal through the isthmus will become a highway to American triumphs in the Pacific.

OUR COMMERCIAL MOVEMENT.

If by the time the Panama Canal is completed the commercial world of America needs foreign outlet, we shall utilize the isthmian waterway to good purpose, but if the completion of the canal happens to be at a time of prosperity, like the present, it is not likely that it will have any appreciable effect upon our commercial movements. There was large promise that the Philippines were to become the stepping stones to our trade mastery of the Orient, but we have failed even to get the trade of the Philippines.

If we needed a foreign field, we would go down to Brazil, a growing republic, whose area is almost equal to the whole continent of

Europe. If we compare our total exports to Brazil with the value of the exchanges in the clearing houses of the United States, the paltriness of our traffic with the largest republic of the southern continent will appear. At the present rate of shipments to Brazil, it will take more than 10,000 years for their value to equal the sum of the exchanges in the 103 clearing houses of the United States in 1905.

"E. A. F." stated in a recent communication to the *International Weekly* that specialists have found errors in some of the figures used in my articles. As all the figures so employed were taken from official sources, it is likely that they were correct. However, I should be pleased to have specific errors pointed out. The only mistakes that I can think of are the typographical confusion of millions with billions occasionally, as I have indicated. "E. A. F." also refers to the fact that certain large manufacturing concerns have actually sent out representatives to look for foreign trade.

A number of the big establishments have been engaged in such enterprises, but, in a broad sense, the American commercial world has been indifferent to foreign opportunity. To say that we have tried seriously to get foreign commerce is to charge the American captain of industry with incapacity beyond our shore lines, for, with one or two exceptions, there have been no trade triumphs over-sea worthy of the industrial and financial genius that has tansformed this contient into the most prosperous nation in the world.

NOT IN THEIR CONFIDENCE.

If the sending out of representatives from New York firms to secure markets in other parts of the world represents the beginning of a national movement in that direction, it is more auspicious than the construction of the Panama Canal. It is true, as my critic states, that big manufacturers do not take federal statisticians into their confidence when about to descend commercially upon a foreign market. But as a record is kept of all the merchandise exported, the statistician has no difficulty in keeping track of any success achieved abroad.

It should be kept in mind that it is the government, not the business world, that is building the Panama Canal. The government has nothing to export. If the manufacturers of America reach the point where a steady foreign market is necessary to their prosperity, they will not wait for engineers and government commissioners to decide on the best means of getting from the Atlantic to the Pacific at Panama.

General Sherman, in his march to the sea, had with him a bridge builder who typified the resourceful American spirit. "How long will it take you," said General Sherman, "to build a bridge so that the troops can cross this river?" The blunt builder replied that he could do it in three days. Sherman thereupon commissioned his engineers to prepare plans for the bridge. At the end of three days the general sent for the builder and asked him what progress had been made. "The bridge is finished," was the reply, "and you can begin sending troops over at once unless you have to wait for the engineers to finish making them pictures."

If the men who have built commercial America need to cross over into foreign territory, they will not wait until the engineers complete our great federal project at Panama.

At present, the problem in the United States is not how to get foreign trade, but how to to build cars fast enough to carry products from our mills to our own people. During the the autumn months of 1905, a number of factories in America had to close because of their inability to get enough cars to carry off their output. Many sections of America are handicapped, too, because of the scarcity of labor. Our $6,000,000,000 harvest last year, our $15,000,000,000 worth of factory goods produced, and our $142,000,000,000 worth of clearing house transactions, represent a prosperity which is dependent only in a most fractional way upon foreign markets.—*Harold Bolce in the New York Commercial.*

STRANGE TRIBES OF THE ANDES

Baron Erland Nordenskjöld, who last summer completed an 18-months' journey through the Andes, has given some details of his experiences in the northern forests of Bolivia and among the Indian tribes dwelling in practically unknown districts along tributaries of the Amazon. He found three tribes who, until two years ago, lived like people of the stone age. One of these tribes, the Atsapuacas, had never before been visited by a white man, but they had tools obtained through other tribes. With a fourth tribe, through whose territory the expedition marched, Baron Nordenskjöld was unable to get into contact. These people watched the strangers without molesting them, but would have nothing to do with them. Some of the people living round Lake Titicaca and in the fells of the Andes retain, almost unaltered, many customs of the times of the Incas

LIMIT OF TELEPHONIC SPEECH

Mr. John Gavey, the new president of the Institution of Civil Engineers, remarked in a recent address that there appears to be little prospect of serious competition between telephony and telegraphy after a certain critical distance has been reached. Much attention has been devoted to the question, What are the extreme limits of effective commercial speech? And taking all the facts into consideration, and allowing a large margin of safety, it is generally considered that from 42 to 46 miles of the English standard telephone cable is the effective commercial limit. Mr. Gavey is of the opinion that wireless telegraphy is not likely to supplant, or even to compete seriously with, inland methods of communication. The problem of devising submarine cables for long-distance telephones, according to Mr. Gavey, is yet to be solved.

LONDON BEGGARS

It is calculated that in London alone about four thousand persons regularly make a living by begging: that the average income for each amounts to $7.50 a week, or together over $1,500,000 a year. Last year about two thousand persons were arrested for begging in the streets of London, and many of them were possessed of considerable sums of money and even of bank books showing handsome deposits.

STUDYING THE SUN

It is regarded as a remarkable fact that last September two international bodies of scientific men, concerned with the study of the sun, met in Europe and formulated plans for future work. One was the Solar Commission, established in 1903 to deal with the problem of the sun's influence upon meteorological changes on the earth, which met at Innsbruck; the other was the Solar Union, established in 1904, with the object of promoting more exact knowledge of the state of things on the sun itself, which held its meeting at Oxford. Both associations include in their membership many of the leading astronomers and meteorologists of the world, and their aim is to unify and systematize the work of great observatories and institutions of research scattered through many lands, in order to facilitate and accelerate the solution of the important problems to which they are devoted.

THE ISTHMIAN CANAL

President Roosevelt sent to Congress, January 8th, a letter transmitting the reports of the Isthmian Canal Commission and the Panama Railroad Co., in which he declared that the work on the isthmus is being admirably done, and that there is good reason to believe that the canal will be completed in a shorter time than had been anticipated and at a cost within the estimated amount. The President referred to published accusations against those in charge of the work, and said that every specific charge had been immediately investigated and disproved. He deprecated the continuance of such attacks, but courted the fullest investigation by Congress, and urged the necessity of adequate compensation to the commissioners and their subordinates.

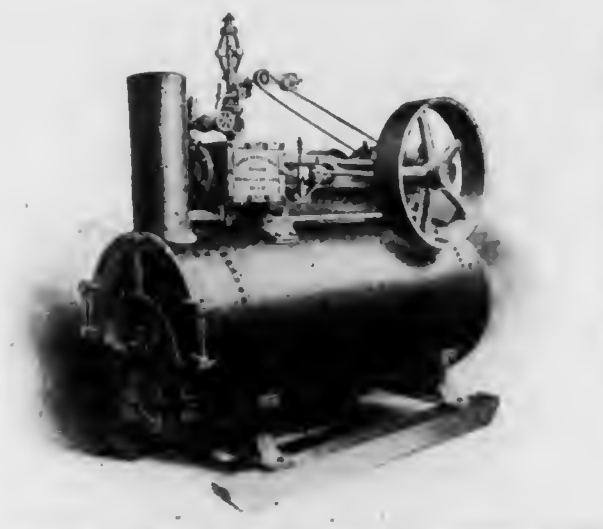
IRON CONSTRUCTION CONDEMNED

In discussing the recent collapse of the roof of the Charing Cross Station in London, Mr. T. G. Jackson, the eminent British architect, says that no architect who wishes a building to live will use iron or steel except in such minor matters as ties, bolts, plates to stiffen timbers or girders. He holds that iron construction is still on trial, and that the life of an iron structure exposed to the weather depends absolutely upon the thin skin of paint, which must be constantly renewed, and that there are necessarily many parts beyond the reach of the paint brush.

SOLVING EMPLOYMENT PROBLEM

Since the establishment of several large employment bureaus by the Ohio State government in 1890, 384,091 applications have been made for work and 325,794 for help. Last year these bureaus found employment for 19,650 persons at an average cost to the State of 68 cents each. This is regarded by sociologists as both cheaper and better than trying to keep up with the procession of unemployed and destitute by supplying poorhouses or other refuges.

New York City has in its zoological garden a herd of thirty-five bisons, survivors of the herds that once trampled the plains. Fifteen have been offered to the United States Government as a gift. The plan is to put them in the Wichita Forest Reserve. Bisons do not thrive in a city park, but the Government herds nearer to a wild state are increasing. The American buffalo may be saved from extinction, after all.



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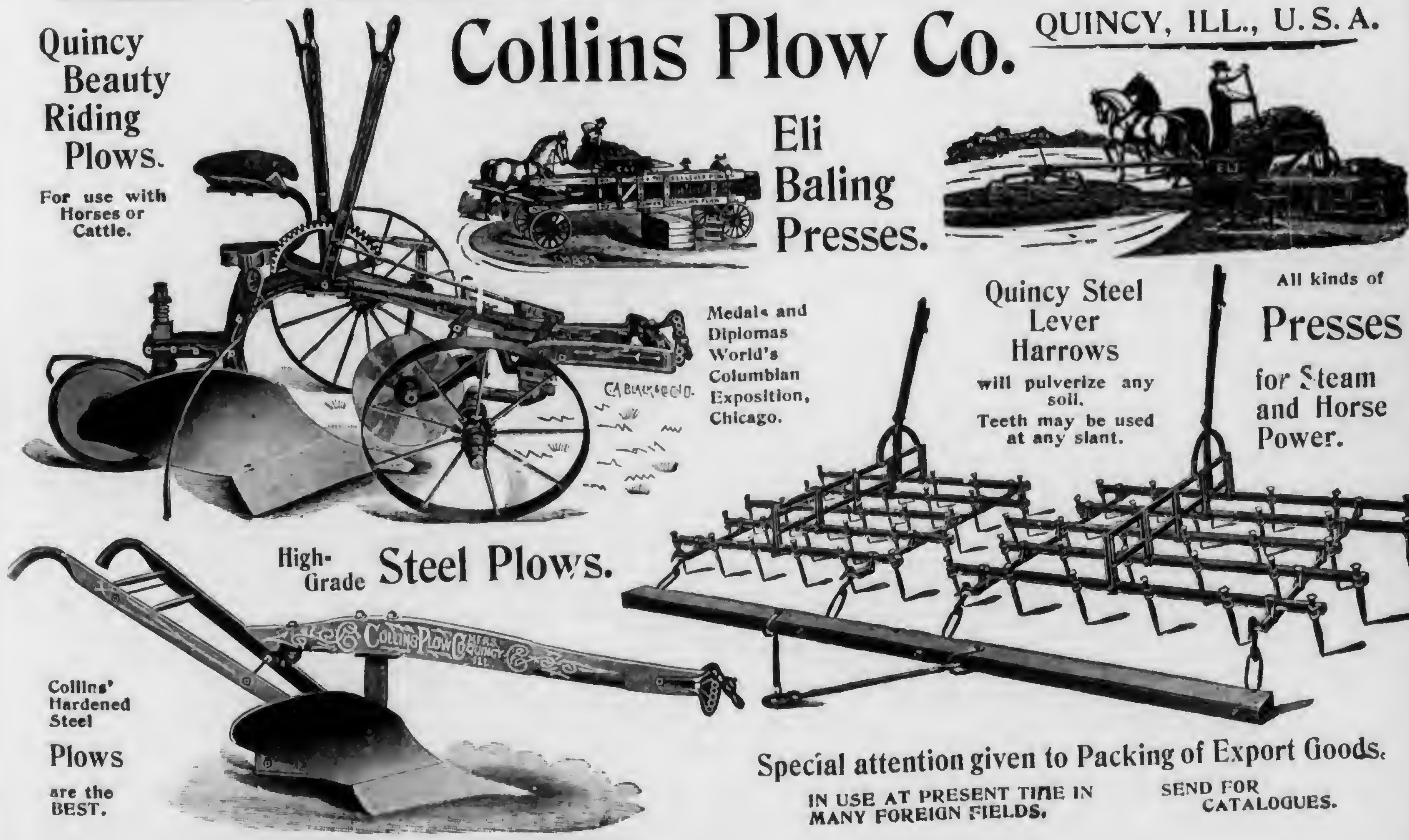
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SOME RECENT INVENTIONS

The following recent inventions have been specially reported for the EXPORT IMPLEMENT AGE by C. LeRoy Parker, Solicitor of Patents, 707 G street, N. W., Washington, D. C., U. S. A.

Sweep Rake

No. 772,125. E. E. Blake. Oct. 11, 1904.

The object of this invention is to provide an attachment for sweep-rakes which shall adapt it for use in crossing irrigating ditches without difficulty. Heretofore, special bridges independent of the implement have been used in crossing these ditches, thus causing much annoyance and delay in the progress of the work.

In arid regions, where irrigation is necessary, many branch ditches of laterals are formed in the land in order to irrigate the ground for crops. By the use of this improvement these ditches or laterals may be crossed without difficulty and, in fact, almost as easily as if the ground were smooth or without ditches.

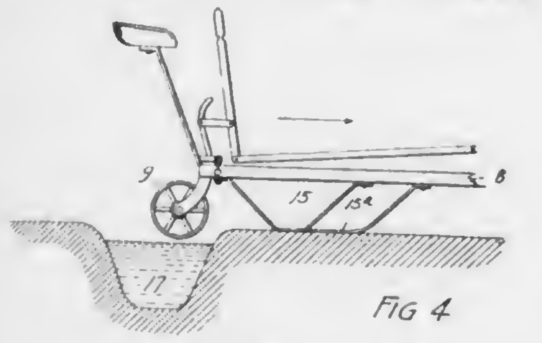
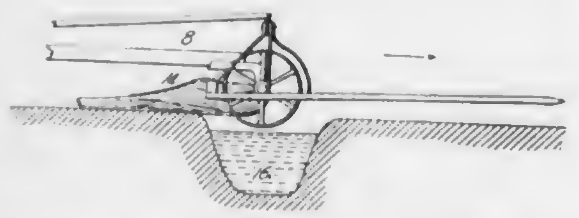


FIG 4



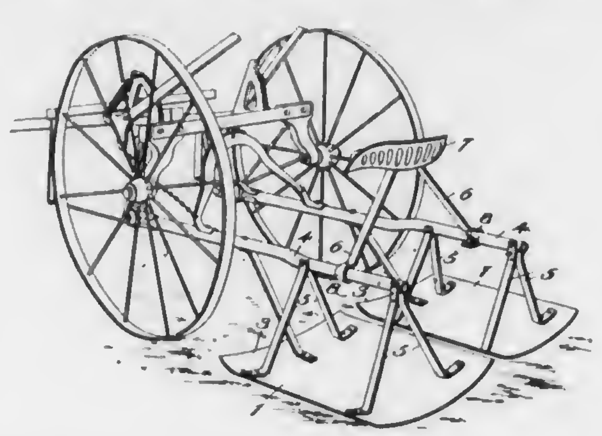
This improvement consists of means attached to the implement and normally occupying a position suitably above the surface of the ground, but adapted to engage the ground and form a support for the implement, whereby the wheels are suspended while crossing these ditches, but engage the ground and take up the burden of the machine as soon as the wheels have passed over the ditch.

Cotton-Weevil Destroyer

No. 773,433. L. A. Stephens. Oct. 25, 1904.

The weevil commences its ravages upon the cotton plants by depositing eggs in the cotton squares or bolls. The squares and young bolls drop from the cotton and collect in the lowest part of the surface between the rows of the plants, and from these bolls full-grown weevils in great abundance will be produced in about seventeen days, and attack and destroy the cotton.

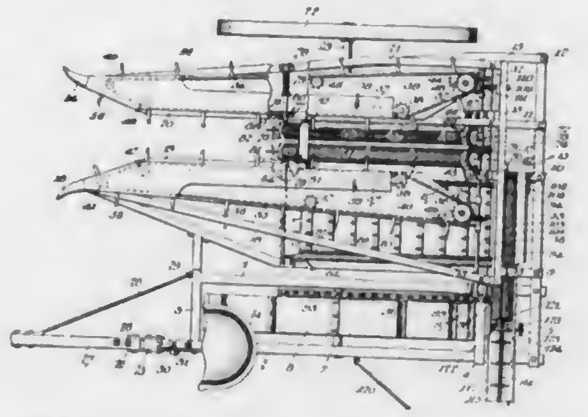
To prevent the hatching of the weevil, this invention is directed to the producing means for destroying their eggs and the weevil by crushing them where they lie upon the ground For this purpose the invention provides sheet-iron crushers, preferably connected together in pairs and drawn straddling the row of plants, each crusher of convex form, shaped like a shovel and weighted by carrying the driver, whose seat is mounted directly upon the crusher, so that they will crush the surface of the ground and cause the crusher to seat itself slightly in the surface. Each crusher is drawn between the rows to crush and destroy the eggs and weevils.



Corn Harvester

No. 782,522. Franklin B. Pierce. Feb. 14, 1905.

This invention relates to that class of corn harvesters which are adapted to operate upon corn standing in the field for the purpose of snapping or removing the ears from the stalks, the ears being further operated upon by husking mechanism, after which they are discharged by elevating mechanism into a receptacle which may consist of a wagon driven alongside of the harvesting machine.



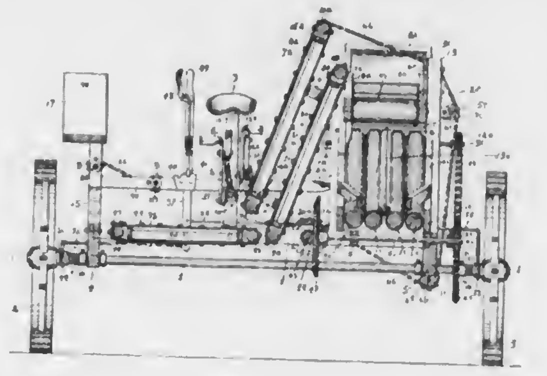
The machine comprises a wheel-supported draft frame having laterally extending cross pieces, forwardly converging nose-bars supported upon said cross-pieces, suitably supported uprights, an upper cross-piece, downwardly and forwardly extending frame-bars supported at their upper ends by the upper cross-piece and connected at their lower front ends with the nose-bars, deck boards supported by the framework, and endless guide chains supported and guided upon the deck boards.

Corn Harvesting Machine

No. 782,449. J. H. Johnson. Feb. 14, 1905.

The object of this invention, broadly speaking, is the provision of a machine which will automatically sever standing stalks of corn or the like, sever the ears of corn from the stalks, remove the husks from the ears, and place the ears in a receptacle provided for that purpose.

To accomplish these objects the inventor has provided a framework mounted on a pair of supporting drive wheels, a common axle on which said wheels are mounted and by which it is adapted to be rotated for operating the various mechanisms, also an improved mechanism for gathering the standing corn to the desired cutting point, and an improved knife and operating mechanism therefor for severing the stalks of corn, a mechanism for carrying the corn to the elevating belts, a novel mechanism for elevating the several stalks and corn attached thereto for depositing it on a carrying device, of the carrying device for carrying the stalks and corn to the stripping rollers, means for removing the ears of corn from the stalks and for carrying the stalks to the rear and for depositing them in bunches, the mechanism for stripping the husks from the ears of corn, and the mechanism for elevating the husked ears of corn and depositing them in a receptacle of novel construction, whereby they may be deposited in gavels on the earth or in a vessel.

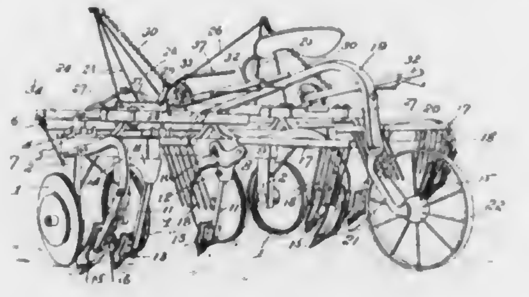


Listed Corn Cultivator

No. 782,281. J. Simpson and L. Johnson. Feb. 14, 1905.

Listed corn is planted in a furrow having a ridge on either side, and it has been heretofore difficult to cultivate the corn during the early stages of its growth to keep it free from weeds. One of the great troubles was that the young plants are destroyed and covered with earth by the cultivating means.

It is one of the main objects of this invention to provide a cultivator by which the ground will be broken and the weeds destroyed and which at the same time will protect the young plants and prevent them from being injured or covered with earth.



Another object of the invention is to provide a cultivator adapted for use on side hills, special means being provided to keep the cultivator in line with the rows.

The cultivator comprises transporting wheels, a pair of cultivator beams rigidly mounted at their forward ends and diverging rearwardly, a small cultivator shovel carried by each of said beams, said small shovels being arranged close together; a large cultivator shovel carried by each of said beams in the rear of the small shovels, these large shovels being arranged a greater distance apart than the smaller shovels; a dirt check mounted adja-

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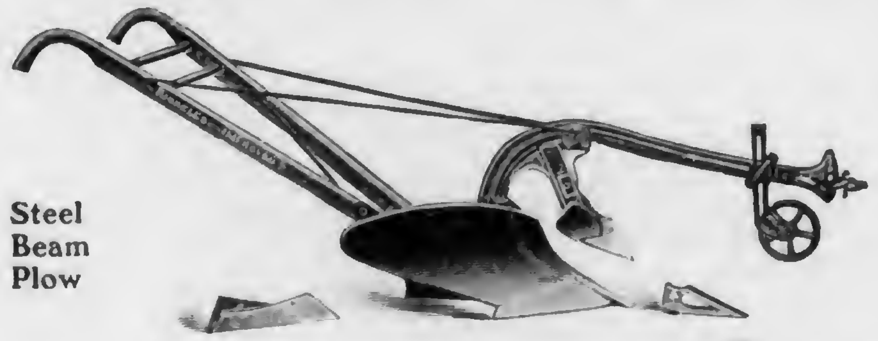

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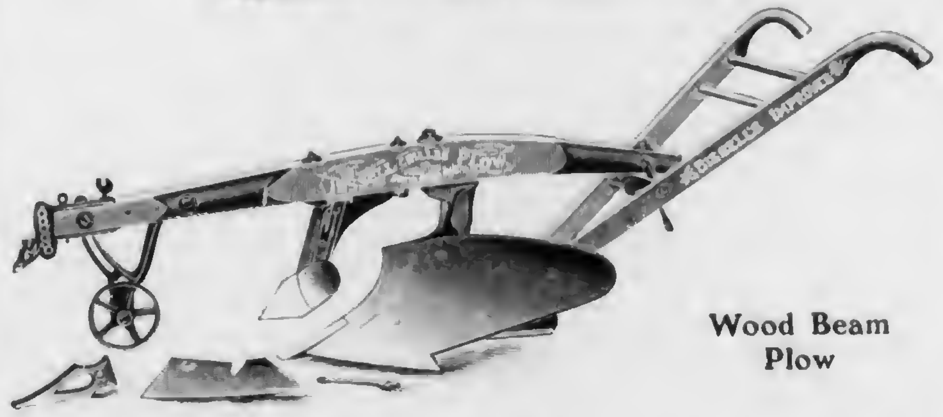

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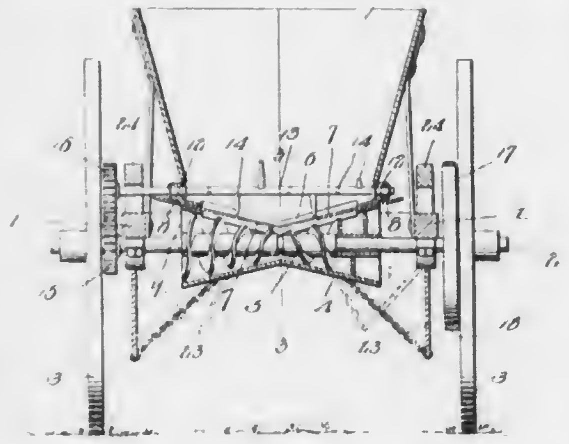
cent each of the large shovels, and means for vertically adjusting the cultivator beams.

Fertilizer Distributer

No. 772,229. A. Fairly. Oct. 11, 1904.

The inventor's purpose in this improvement is to simplify the construction and operation of distributers of this kind.

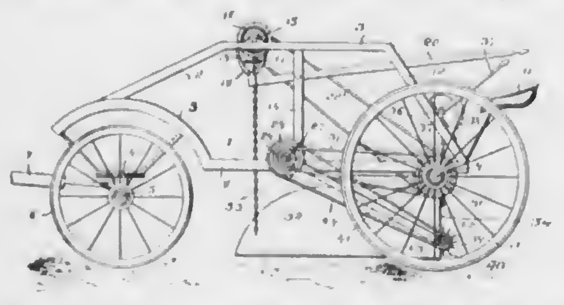
When the machine is propelled over the ground, the fertilizing material contained in the hopper will be agitated by the fingers upon the rotary shaft provided for the purpose, and will be caused to pass into the central portion of the screw-casing through the slot or opening 6, the size of which has been previously regulated. The fertilizing material will be fed by the double screw to the ends of the casing, where it is discharged upon the deflecting boards, whereby it is guided to the furrow. Should it be desired to scatter the fertilizing material broadcast, the free edges of the deflecting boards are placed closely together, and the fertilizing material thus concentrated into a single stream is intercepted by the blast issuing from the blower, whereby it is scattered broadcast, as will be readily understood. When the delivery of the fertilizing material is to be controlled by the deflecting boards, the means for transmitting motion to the blower may be disconnected, as will be readily understood.



Fertilizer Distributer

No. 775,357. T. J. Waddell. Nov. 22, 1904.

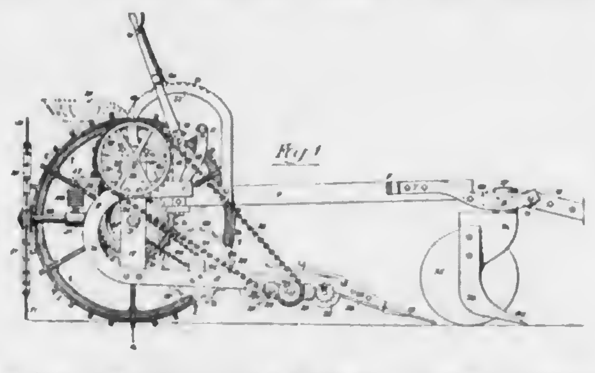
In the operation of this machine, the construction of which is obvious from the illustration, the fertilizer is disposed in the boat 32, and the latter is adjusted to elevate the front end thereof by actuating the operating lever 20 and ratchet-and-dog mechanism heretofore explained or throwing the clutch member 24 into engagement with the clutch member 25, which will cause the chains 33 to wind on the spindle 15, and the chains 35 will be wound on the shaft 36 through the operation of the hand-lever 37 to dispose the said boat at a proper angle, so that the fertilizer will be distributed through the opening 38 in the rear extremity thereof. At the same time the spreader 39 will be set in motion by throwing the clutch member 45 into engagement with the clutch



Potato Digger

No. 771,800. Josiah S. Robbins. Oct. 4, 1904.

This implement is designed to dig potatoes, separate the earth from the same, and finally remove to one side of the row the vines to which the potatoes were attached when in the ground, together with all weeds and grass that may be found with the vines. The digger also includes a special device for gathering the vines into a row directly in line with the plow of the machine, whereby the vines will be confined between the main frame of the machine without danger of clogging any of the moving parts of the apparatus until they are caught by special means located at the rear of the machine and swept away from the potatoes.



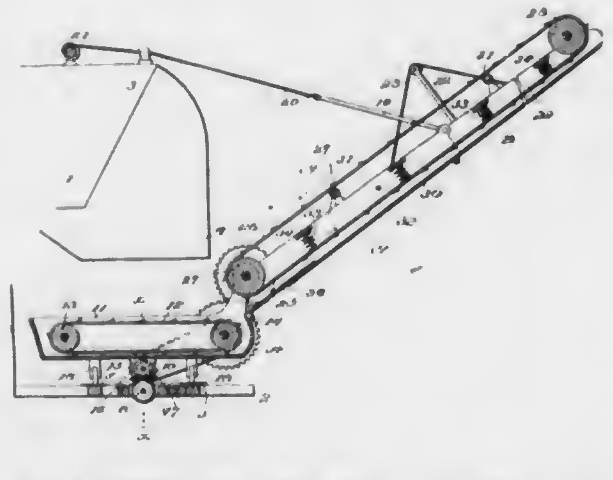
The machine consists of a digging member, adapted to be drawn through the ground, and a series of rotatable, concentrically-mounted disk plates having circular peripheries and arranged at the rear of this digging member, said plates providing a moving platform having a surface which constantly maintains the same plane and serves to receive the material raised by the digging member, separate the looser portion and pass the balance to the rear of the machine.

Straw Stacker

No. 773,184. J. O. Bashore. Oct. 25, 1904.

An essential feature of this stacker is to prevent contact of the return portion of the endless conveyor with any portion of the stack, which is objectionable in retarding the work and detracting from the efficiency of the machine.

A further purpose of the invention is to prevent rolling of the straw in the event of the same being damp and the consequent choking of the stacker, the latter being provided with a yieldable plate to adapt itself to the bulk of straw passing through the stacker at any given time.



The straw-stacker comprises a frame having a bottom and side piece, an endless apron located wholly above and spaced from the bottom of the frame to provide a passage-way for the straw, a second frame about in the plane of the lower portion of the said endless apron, and springs exerting pressure upon said second frame to admit of yielding thereof.

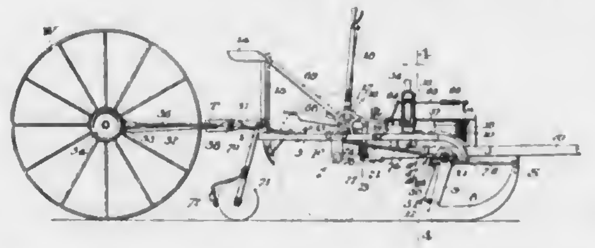
The operation of the stacker is obvious from the illustration.

Corn Planter

No. 771,964. H. C. Badenhop and W. Rosebrock. Oct. 11, 1904.

This invention has particular reference to check rowers of that class which are operated without a chain stretched across the field for the purpose of actuating the seed-dropping mechanism, and in which, consequently, means are provided for the purpose of transmitting motion to the corn-dropping mechanism from a ground-engaging wheel.

As the machine progresses over the field, the trailer wheel, for which a track is prepared in advance, will serve to actuate the mechanism whereby the seed-dropping mechanism is operated. On arriving at the end of a furrow the driver by manipulating the lever 69 will push the trip member in a forward direction, thus causing the free end of the strap 59 to be lowered, and thus lowering the markers, the ground-engaging members at the outer ends of which will thus indicate the place at which the next row is to be started. The operating lever 18 is now manipulated to raise the rear end of the tongue for the purpose of elevating the runner frame from the ground while the machine is being turned. By this operation the free end of the strap 59, which has meanwhile been supported upon a block 74 at the rear end of the tongue will be elevated with the tongue, thus raising the free ends of the markers. At the same time the tension exerted by the spring 66 upon the catch 64 will serve to elevate the trip member, which is thereby restored to its normal position under the free end of the strap 59, thus supporting the markers until a repetition of the operation is desired.



BALLOONING AS A SPORT

A French lawyer whose sport is ballooning thinks it a mild, safe and comparatively inexpensive diversion. He has made sixty ascents without injury to himself. A well-made balloon will last ten years—longer than an automobile—and will cost only from four hundred to one thousand dollars. Its upkeep is confined to the cost of the gas and the return journeys by train after a trip. "In keeping with the amount of pleasure to be had out of the sport," says this enthusiastic aeronaut, "I know of no other which may be compared with it at the price."

The statistics of the German post-office department, furnished by Consul-General Guenther, of Frankfort, shows that 10,549,100 pieces of mail matter were sent to Germany from the United States, and 11,722,000 pieces were sent to the United States from Germany in 1904.

Export Implement Age

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OUR EXPORTS TO CUBA UNDER RECIPROCITY

The Cuban reciprocity agreement with the United States went into effect on December 27, 1903, so that it has now been in operation for two full calendar years. The moment is opportune, therefore, to inquire as to the effect which the arrangement in question has had on the commercial relations of the two countries.

In the first place the total value of our trade with Cuba has expanded to unprecedented dimensions. Exports have increased from $23,504,417 in 1903, the year before the treaty went into effect, to $32,644,345 in the calendar year 1904, and to the record-breaking valuation of $44,569,842 in the calendar year just ended. In other words, our exports to Cuba in the course of only twenty-four months have increased by $21,065,395, or almost 90 per cent. That is, every month has seen an average increase of nearly $1,000,000 in these exports.

Our relative share in Cuba's total imports has also shown a steady increase. In the calendar year 1904 Cuba imported merchandise to the value of $77,082,100, an increase of 21½ per cent. in the same period. Furthermore, although during this period the imports from other nations showed uniform increases their relative shares in supplying Cuban markets were, for the most part, less in 1904 than in 1903. Of Cuba's total imports, those from the United States constituted 38.6 per cent in 1903 and 42.5 per cent. in 1904. What part they constituted in 1905 cannot be given with exactness at present because Cuba's report is not yet at hand, but it seems safe to say that one-half the island's imports last year came from this country.

The following table showing the commodities in which we have increased our sales to Cuba during the past two calendar years will probably be of general interest:

	1903	1904	1905
Wheat flour	$2,068,083	$3,039,655	$3,443,048
Boards, deals, etc.,	980,468	1,423,975	1 904,022
Builders' hardware,	366,325	389,844	628 869
Locomotives,	127,845	221,089	628,831
Paper and mfrs. of,	250,343	336,075	406,400
Furniture,	334,848	479,834	696,579
Agricultural impl'ts,	83,313	141,679	253 950
Cotton cloths,	271,582	655,991	1,212,319
Cottons, except cloths,	236,403	355,893	433 032
Sewing machines,	198,542	291,140	370,356
Typewriters,	30 926	53,886	69,881
Leather,	116,494	200,254	267,530

It is evident from the foregoing statistics that our growth in exports to Cuba has been in a wide variety of commodities. How favorably does it compare, for example, with the growth of our exports to Japan, which growth, as we have had occasion in the past to point out, has consisted in chief measure of increased sales of raw cottons. That Cuba is an almost infinitely better customer of the United States than is Japan, must be evident when it is said that, with 45,000,000 fewer people, Cuba purchases only a few millions of dollars' worth less of merchandise in this country than does Japan.

Cuba has also greatly benefited by the reciprocity agreement with the United States, but the fact should be kept in mind that that agreement was not entered into with a view to benefiting us alone. If, however, the above table indicates anything, it is that American manufacturers have found a profitable and promising market in Cuba and would not consent to forego the privileges which they now enjoy there.

AMERICA AND GERMANY

The German government has given the United States fifteen months in which to think over the question of trade relations. By continuing the provisional agreement and abandoning temporarily, so far as this country is concerned, a tariff policy which it has much at heart, that government has shown its reasonableness—its readiness to deal with conditions as it finds them, and its commercial wisdom. It recognizes the fact that a tariff war would hurt Germany more than it would the United States, and that the only beneficiary of such a war would be some third nation.

There are many American producers to whom this stay of proceedings will be most welcome. While they understand that a tariff war would inflict more injury on Germany than on this country, they know that such a war, while benefiting no American interest, would injure them. It would deprive them of a good market, and in this age of competition new good markets are not easily found. Doubtless they will do what they can during the truce which has been granted to persuade the American government to enter into a permanent agreement with Germany.

There is room for an agreement which will be satisfactory to Germany and which will sacrifice no American interest. The executive department of the government is able and willing to negotiate such an agreement. The difficulty is to get the legislative department to concur. Any measure which softens in the least degree the asperity of the Dingley law has its influential opponents who do not mind a tariff war because it will not affect the petty interests they represent.

It is too much to expect that Germany will assent to another provisional arrangement after the new one shall have come to an end. If the United States has the common sense abhorrence of a tariff war Germany has displayed a permanent agreement will be reached before June, 1907.

MORGAN-POTTER CO.

We desire to call attention to the advertisement of the Morgan Potter Co. which appears on another page. They are very large manufacturers of Potter's spring brake block. There are over 25,000 sets of these blocks in use throughout the United States and they are conceded to be ahead of anything in their class. They are economical because they are not only reasonable in price, but are extremely durable and satisfactory in every respect. The company make them for steel tires and they are also specially adapted for rubber tires. One of their strong points is that they will not injure a rubber tire in any way whatever. The company solicit correspondence from foreign buyers, who should address the Morgan Potter Co., Fishkill-on-Hudson, N. Y., U. S. A.

INTERNAL COMMERCE IN 1905

The aggregate volume of internal commerce during 1905 was the largest for any corresponding twelve-month period in the history of the country. According to reports made be the Department of Commerce and Labor, the greatly increased activities in the iron, steel and copper industries were particularly worthy of note. Shipments of coke were heavily increased. Receipts and shipments of grain and live stock presented, in the aggregate, heavy gains, while lumber production and shipments in practically all sections of the country, including the southern and west gulf States, the Mississippi and Wisconsin valleys and the Pacific slope, were far in excess of 1904. The total grain receipts at twelve important interior primary markets during 1905 aggregated 762,624,710 bushels, in contrast with 680,851236 bushels in 1904, divided as follows: 240,742,480 bushels of wheat, 223,857,300 bushels of corn, 207,824,201 bushels of oats, 80,076,914 bushels of barley and 10,123,755 bushels of rye. As compared with 1904, gains were made in receipts of all except rye. During 1905 112,220,000 bushels of grain were shipped eastward over the trunk lines from Chicago and Chicago points, as compared with a similar movement in 1904 of 90,501,000 bushels, and in 1903 of 70,729,000 bushels. Durings 1905 174,036,396 bushels of grain were exported from various United States ports, and of this quantity 102,[illegible] 582 bushels were credited to Atlantic ports, 37 305,682 bushels to gulf ports, 14,872,135 bushels to Pacific ports and 18,863,996 bushels to northern border, lake and other border ports. The similar total outbound movement in 1904 aggregated 69,012,892 bushels. The total corn exports which were 110,999,265 bushels in 1905, as against 46,390,627 bushels in 1904, were the greatest factors in the accomplishment of this improved condition, though foreign shipments of oats were remarkable, advancing from 1,192,338 bushels in 1904 to 28,641,663 bushels in 1905. Flour exports for the entire year aggregated 11,281,037 barrels, falling slightly below similar movements in 1904. Domestic shipments from various ports on the Great Lakes during 1905 reached 67,345,620 tons, representing the greatest traffic movement for any year in the history of lake navigation. Of the different commodities shipped during the year, ore and minerals aggregated 38,096,210 tons, coal 14,665,885 tons, unclassified freight 5,201,351 tons, grain and flaxseed 3,856,183 tons, lumber and logs 4,268,905 tons, and flour 1,257,096 tons. The heaviest gain occurred in shipments of ore and minerals, which, during 1904, amounted to but 23,813,411 tons.

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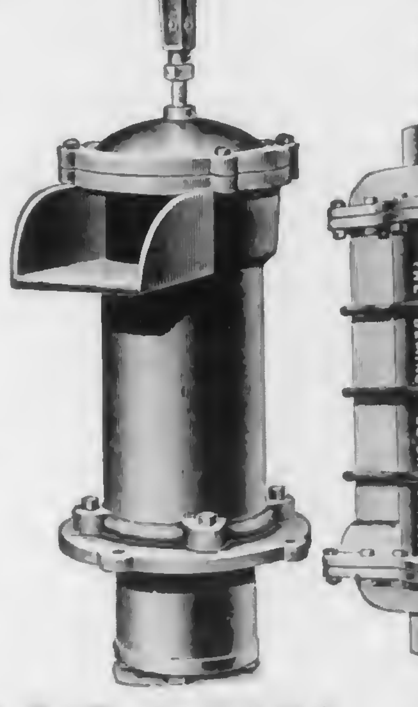
The Marseilles Mfg. Co. have for many years been recognized as among the most progressive agricultural machinery manufacturers. Several years ago they entered upon the export field, and their goods have been popular wherever introduced. They have unsurpassed manufacturing facilities and are prepared to handle orders from abroad with the utmost care and promptness. They solicit correspondence in any language and may be addressed, Marseilles Mfg. Co., Marseilles, Ill., U. S. A.



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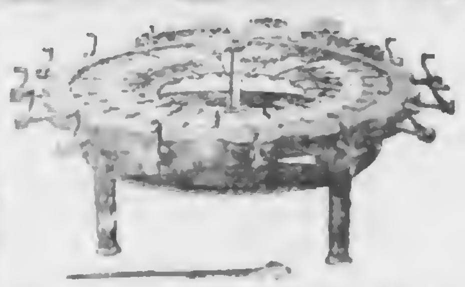

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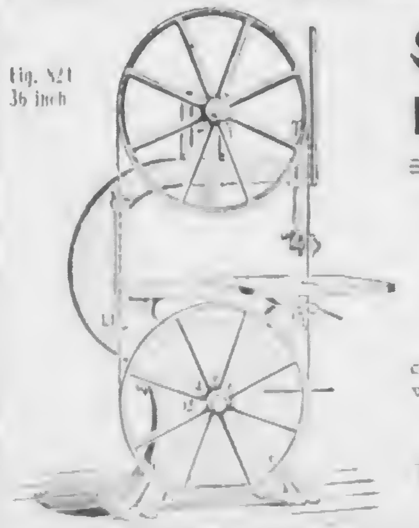

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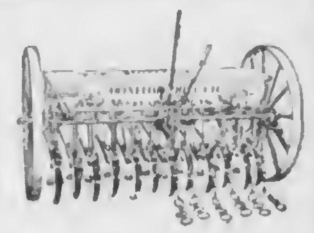

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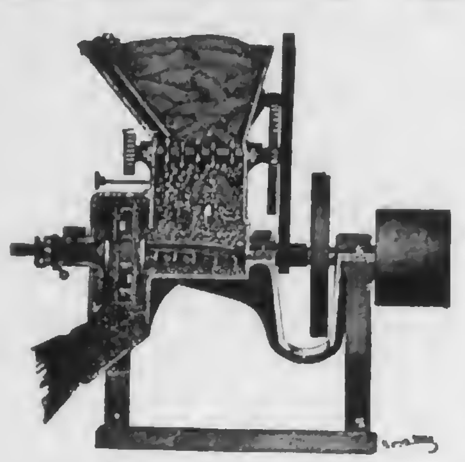

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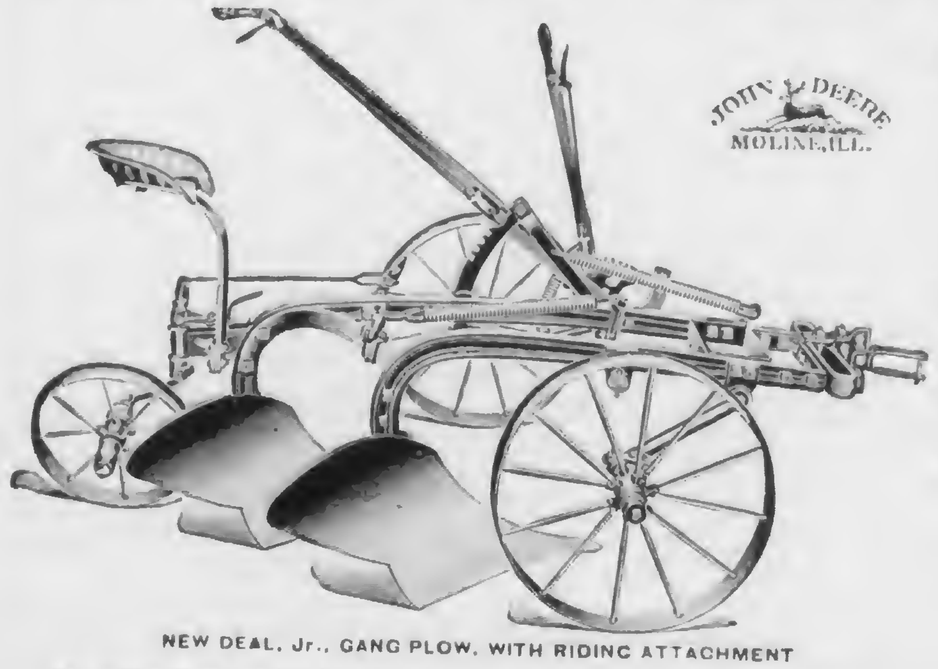

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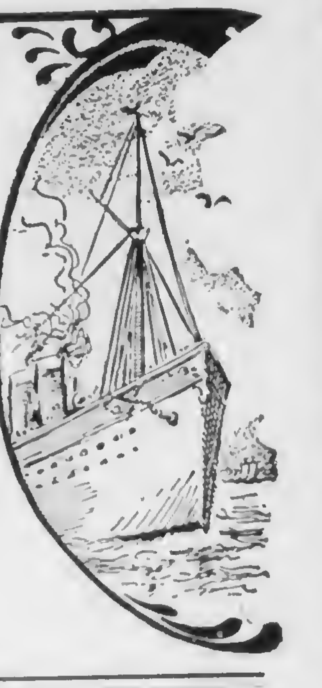

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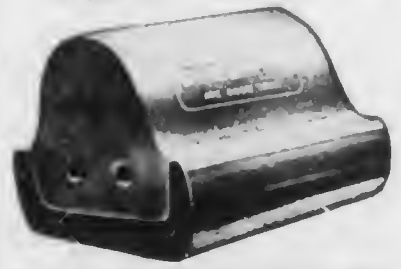

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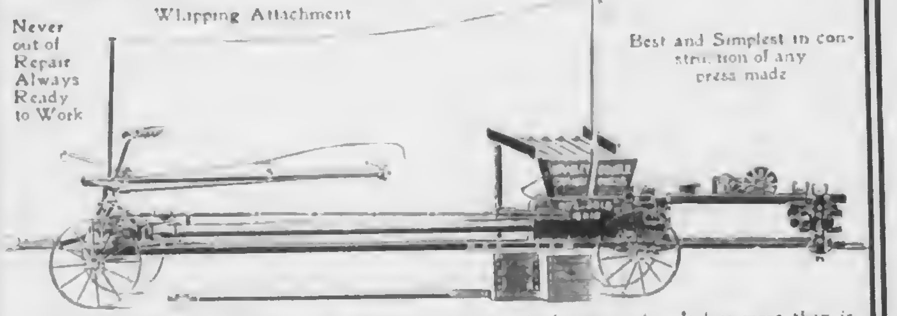

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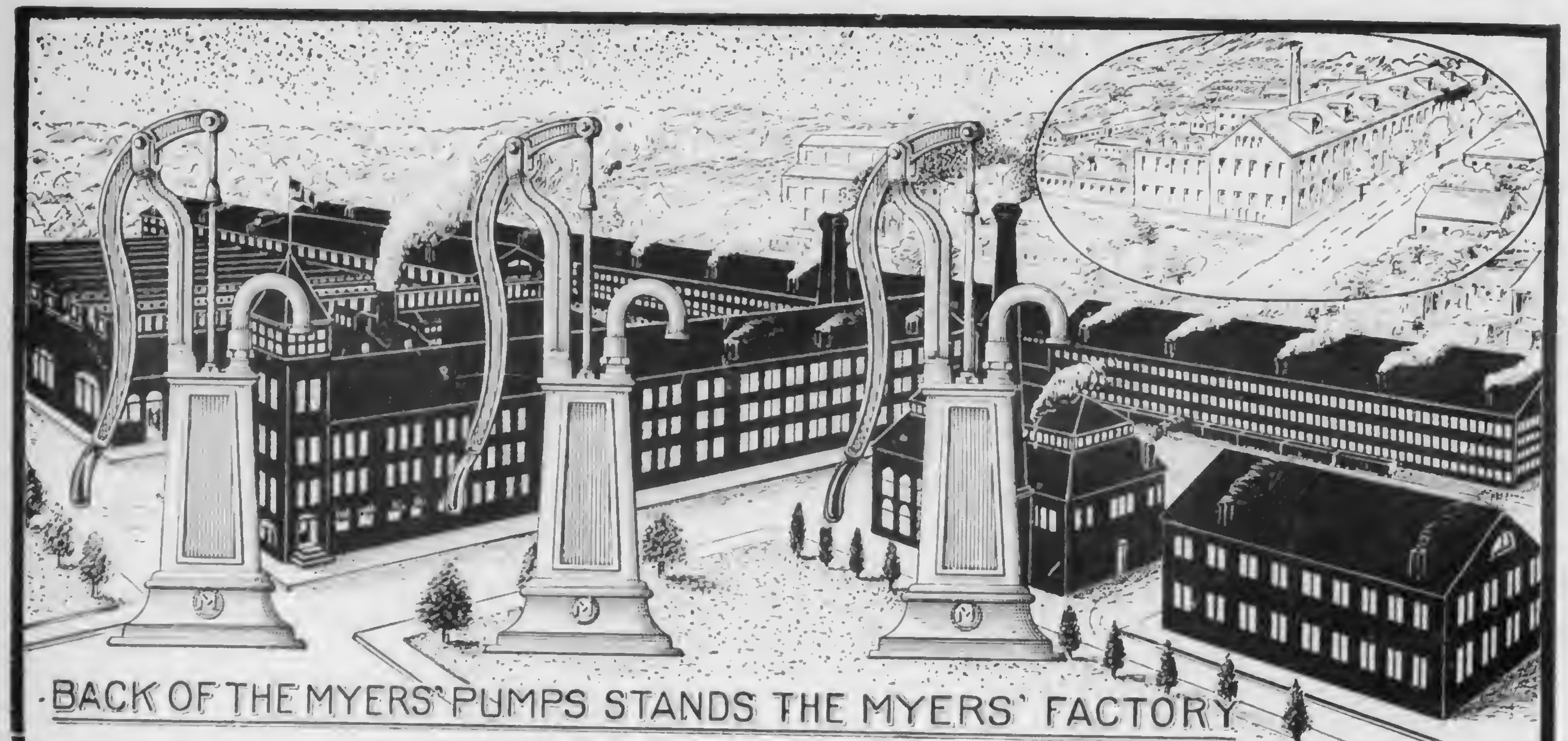
Established 1870

SEND FOR CATALOGUE AND PRICES


BACK OF THE MYERS' PUMPS STANDS THE MYERS' FACTORY

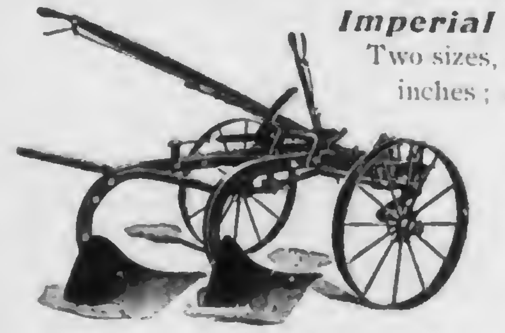
The largest factory in the United States devoted exclusively to the manufacture of *Pumps* and *Hay Tools*; a modern, up-to-date plant with perfect equipment, prepared to fill domestic or export orders of any magnitude promptly and intelligently. Best kind of Pumps for all Pumping Purposes. Best kind of Hay Tools of every description. ***MYERS PUMPS and MYERS HAY TOOLS are the First Choice of Progressive Dealers all over the civilized world.*** Highest award (Gold Medal) at St. Louis, Pan-American and Charleston Expositions.

F. E. MYERS & BRO., Export Office, B 17-21 Produce Exchange, New York, U. S. A. FACTORY: ASHLAND, OHIO

IMPERIAL LINE IMPLEMENTS

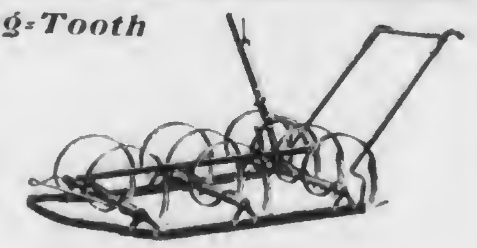
Imperial Stark Gang Plow

Two sizes, cutting 24 inches and 28 inches; all soft centre steel.



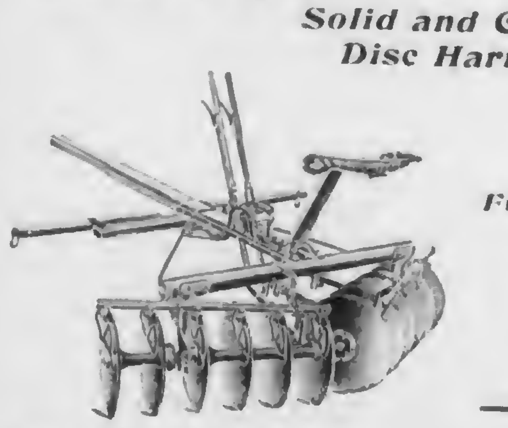
Specially constructed for export trade.

Imperial Spring-Tooth Cultivator

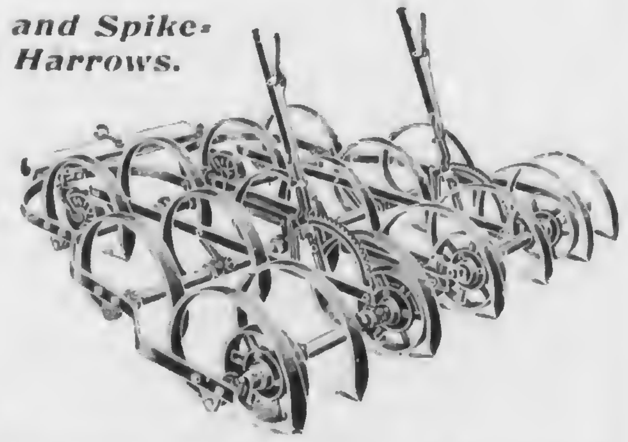


Specially designed for working in vineyards.

Solid and Cut-Out Disc Harrows.



Spring and Spike-Tooth Harrows.



Several sizes and styles.

Full Line Single and Double Furrow Plows, Cultivators, Etc.

CATALOGUE, No. 104 Free on Application.

THE BUCHER & GIBBS PLOW CO. B-21 Produce Exchange, NEW YORK, N. Y., U. S. A.
Factory: CANTON, OHIO.

Directory for Buyers.

The names of firms given below, together with the goods mentioned, are arranged for the convenience of buyers. Their products are given in the English, French, Spanish and German languages. These establishments are among the leading ones in the United States, are strictly reliable, have extensive facilities and are prompt in transacting business. They fully understand the export trade and carefully look after all foreign orders. The EXPORT IMPLEMENT AGE is kept on file in their offices, and any mention of the journal will be an incentive to even greater promptness on their part in obliging you. Inquiries from foreign buyers desiring information relative to American agricultural machinery or implements addressed to them will be given careful and prompt attention. Write in any language you prefer.

Rèpertoire à l'Usage des Acheteurs

Les maisons ci-dessous et les produits mentionnés ont été classés dans cet ordre pour la commodité des acheteurs de langues anglaise, française, espagnole et allemande. Ces établissements sont parmi les principaux des Etats-Unis, ils sont absolument sérieux, ils possèdent de grandes facilités, sont prompts en affaires. Ils connaissent à fond le cemmerce d'exportation et donnent tous leurs soins à l'exécution des commandes qui leur viennent de l'étranger. Ils conservent une collection de l'EXPORT IMPLEMENT AGE dans leurs bureaux, et la simple mention de ce journal stimulera davantage encore, si possible, leur zèle et leur promptitude à obliger leurs clients. L'EXPORT IMPLEMENT AGE, de son côté, donnera une prompte attention aux demandes de ronseignements sur machines et instruments agricoles américains, que peuvent lui adresser les acheteurs de l'étranger. Ecrire dans la langue que l'on préfere.

Directorio para los Compradores.

Los nombres de los artículos que fabrican las firmas ó casas mencionadas á continuación se dan, para conveniencia de los compradores, en los idiomas inglés, francés, español y alemán. Esos establecimientos, que se cuentan entre los principales de los Estados Unidos, están completamente acreditados, son dignos de toda confianza y tienen las mayores facilidades para ejecutar y despachar con prontitud todos sus negocios. Conocen á fondo el comercio de exportación y atienden con el mayor esmero à todos los pedidos que reciben del extranjero. Los números del EXPORT IMPLEMENT AGE se coleccionan en sus oficinas, y toda referencia á esta revista es un incentivo para atender con mayor prontitud aun á vuestros requerimientos. Todos los informes que pidan los compradores del extranjero serán suministrados á la mayor brevedad por esos fabricantes sobre la maquinaria agrícola é instrumentos de labranza americanos. Escribidles en cualquier idioma que prefiráis.

Firmen-Verzeichnis für Käufer.

Die Erzeugnisse der unten genannten Firmen sind für die Bequemlichkeit ausländischer Käufer in englischer, französischer spanischer und deutscher, Sprache hier wiedergegeben. Genannte Etablissemente gehören zu den bedeutendsten in den Vereinigten Staaten; sie sind in jeder Weise zuverlässig, besitzen ausgedehnte Facilitäten und erfreuen sich eines ehrenvollen Rufes. Alle von ihnen unternommenen Geschäftstransaktionen werden in promptester Weise zur Ausführung gebracht. Jedes hierin genannte Haus ist mit dem Exporthandel wohl vertraut und um auswärtige Aufträge eifrig bemüht. Das EXPORT IMPLEMENT AGE wird von all diesen Firmen gelesen, dient ihnen sozusagen als Informations-Register und dürfte somit eine Angabe dieses Journals bei event. Waarenbestellung nur zur Anregung grösserer Promptheit dienen, um p.p. Käufern in bestmöglicher Weise entgegenkommen zu können. Jede auswärtige Anfrage hinsichtlich amerikanischer landwirthschaftlicher Maschinen und Geräthe wird nicht allein prompte, sondern auch stets sorgfältige Aufmerksamkeit erhalten. Interessenten können sich jeder beliebigen Sprache zur Korrespondenz bedienen.

Ambulances
Carros de hospital
Krankenwägen (Ambulanzen)

Baling Presses (Hay, Straw, Etc.)
Presses à foin, paille, etc.
Prensas de Embalar (Heno, Paja, etc.)
Ballen Pressen (für Heu, Stroh, u. s. w.)

Bradley Mfg. Co., David, Bradley, Ill. 1
Collins Plow Co., Quincy, Ill. 29
Ertel Co., George, Quincy, Ill. 6

Beet Implements (Planting, Cultivating and Harvesting)
Betteraves (Instruments pour la culture des)
Instrumentos para el Cultivo de la Remolacha (Sembradoras, Cultivadoras y Cosechadoras)
Rübengeräte (zum Pflanzen, Pflügen und Ernten)

Moline Plow Co., Moline, Ill. 6

Binders, Self (Wheat, Rye, Oats, etc.)
Lieuses Automatiques (Blé, Orge, Avoine, etc.)
Agavilladoras Automáticas (Trigo, centeno avena, etc.)
Selbstbindemaschinen (für Weizen, Roggen, Hafer u. s. w.

Boilers.
Chaudières.
Calderas.
Kessel.

Leffel & Co., James, Springfield, Ohio 29

Bolts and Nuts.
Boulons et écrous.
Pernos y Tuercas.
Bolzen und Muttern (Mutterbolzen)

Columbus Bolt Works, Columbus, Ohio 36

Brakes (Vehicle)
Retrancas (Vehículo)
Frein (de Voiture)
Bremsen (für Fahrzeuge)

Potter Co., The Morgan, Fishkill on Hudson, N. Y. . . 3

Carriages
Voitures
Carruajes
Kaleschen und Wagen

Dapson & Wolf, Oneida, N. Y. 3
Studebaker Bros. Mfg. Co., South Bend, Ind. 36

Carriage Cloth
Wagentuch
Paño de carruaje
Drap de Voiture

Fairfield Rubber Co., The, Fairfield, Conn. 5

Carriage Materials
Articles pour voitures
Materials for Carriages
Wagenmaterial

Carts (Riding)
Charrettes (à siège)
Carretones (de Montar)
Frachtkarren (Reitkarren)

Dapson & Wolf Oneida, N. Y. 8

Cider and Wine Presses
Pressoirs à vin et à cidre
Prensas para Hacer Cidra y Vino
Kelterapparate für Wein und Apfelwein

Lansing Wheelbarrow Co., Lansing, Mich. 29

Clothes Washing Machines
Linge (machines à laver le)
Máquinas de Savar Ropa
Wäsche Waschmaschinen

"1900" Washer Co., Binghamton, N. Y. 36

Coal Cars
Charbon (wagons pour)
Carros para Carbón de Piedra
Kohlenwaggons

Lansing Wheelbarrow Co., Lansing, Mich. 29

Coal Shutes
Charbon (Dalles à)
Canales para Descargar Carbón de Piedra
Kohlen Lade-Rinnen

Lansing Wheelbarrow Co., Lansing, Mich. 29

Corn Crushers
Mais (Concasseurs de)
Trituradoras de Maiz
Mais Zerquetschmaschinen

Sprout, Waldron & Co., Muncy, Pa. 8

Corn Harvesters
Mais (Moissonneuses de)
Cosechadoras de Maiz
Mais Erntemaschinen

Standard Harrow Co., Utica, N. Y. 8

Corn Huskers and Shredders
Mais (Instruments à enlever et à déchirer les bractées du)
Desgranadoras y Picadoras de Maiz
Mais Enthülsemaschinen und Auswerfapparate

Bradley Mfg. Co., David, Bradley, Ill. 1

Corn Planters (Hand)
Mais (Semoirs de, à main)
Sembradoras de Maiz (A Mano)
Maispflanzer (für Handbetrieb)

Ohio Cultivator Co., The, Bellevue, Ohio 31

Corn Planters (Horse)
Mais (Semoirs de, à cheval)
Sembradoras de Maiz (para Caballo)
Mais Pflanzmaschinen (für Pferdebetrieb)

Bradley Mfg. Co., David, Bradley, Ill. 1
Moline Plow Co., Moline, Ill. 6

Corn Shellers (Hand)
Mais (Egrenoirs de, à main)
Descascaradoras de Maiz (de Mano)
Mais Pflanzmaschinen (für Handbetrieb)

Marseilles Mfg. Co., Marseilles, Ill.	4
Patch, A. H., Clarksville, Tenn.	5
Sprout, Waldron & Co., Muncy, Pa.	3
Standard Harrow Co., Utica, N. Y.	3
U. S. Wind Engine and Pump Co., Batavia, Ill.	31

Corn Shellers (Power)
Mais (**Egrenoirs de**), á énergie mecanique
Descascaradoras de Maiz (para Fuerza **mecánica**)
Mais Pflanzmaschinen für Pferdebetrieb)

Marseilles Mfg. Co., Marseilles, Ill.	4
Patch, A. H., Clarksville, Tenn.	5
Sprout, Waldron & Co., Muncy, Pa.	3
Standard Harrow Co., Utica, N. Y.	3

Cotton Planters
Coton (Semoirs de)
Sembradoras de Algodón
Baumwoll Pflanzmaschinen

Ohio Cultivator Co., The, Bellevue, Ohio	36

Cultivating Machinery (Hand and Garden)
Culture du sol (Intruments pour la), á main et pour le jardin
Maquinaria Cultivadora (de Mano y para Huerta)
Garten Pfluge (für Handbetrieb)

Deere Plow Co., John, Moline, Ill.	31
Moline Plow Co., Moline, Ill.	6
Standard Harrow Co., Utica, N. Y.	3

Cultivating Machinery (Horse and Field)
Culture du sol (Instruments pour la), à **cheval et** pour le champ
Maqninaria Cultivadora (de Caballo y para el Campo)
Bodenkultur Geräte (für Pferdebetrieb)

Bradley Mfg. Co., David, Bradley, Ill.	1
Deere Plow Co., John, Moline, Ill.	31
Moline Plow Co., Moline, Ill.	6
Ohio Cultivator Co., The, Bellevue, Ohio	36
Standard Harrow Co., Utica, N. Y.	3

Engines and Boilers (Stationary)
Machines à vapeur et Chaudières (**fixes**)
Máquinas de Vapor y Calderas (Fijas)
Maschinen und Kessel (Stationär)

Leffel & Co., James, Springfield, Ohio	29

Engines (Traction and Portable)
Machines à vapeur (Pour la traction et transportables)
Máquinas (De Tracción y Portátiles)
Traktions- oder Zugmaschinen und Lokomobilen

Feed and Ensilage Cutters
Coupe-aliments, coupe-ensilage
Cortadora de Forraje y Ensilaje
Futter- und Grünfutter (Ensilage) Schneidemaschinen

Marseilles Mfg. Co., Marseilles, Ill.	4
Silver Mfg. Co., Salem Ohio	35

Feed Mills
Moulins pour aliments
Molinos de Frorraje ó Pienso
Futtermühlen

Sprout, Waldron & Co., Muncy, Pa.	3

Files (Letter and Card)
Systèmes de classification (lettres et cartes)
Guarda-Cartas y Tarjetas
Skripturenordner (für Briefe und Karten)

Forgings (Carriage)
Pieces forgées (Voiture)
Forjaduras (para carruajes)
Schmiedereien (Kaleschen-)

Gardening Tools (Hand)
Jardinage (**Outils de**) à main
Herramientas de Hortelano (de Mano)
Gärtnerei Handwerkzeug

Grain Cleaning Machinery (**Rice, Coffee, Grain,** Etc.)
Grains (**Machines à nettoyer les**): riz, café, grain, etc.
Maquinaria pare Limpiar Granos (Arroz, Café, Granos, Etc.)
Getreide Reinigungsmaschinen (für Reis, Kaffee, Korn, u. s. w.)

Sprout, Waldron & Co., Muncy, Pa.	5

Grain Drills
Grains (**Semoirs de**)
Sembradoras de Granos
Drillmaschinen

Monitor Drill Co., Minneapolis, Minn.	35
Superior Drill Co., Springfield, Ohio	5

Grain Grinding Mills
Grains (**Moulins à moudre les**)
Molinos para Granos
Schrotmühlen

Flint & Walling Mfg. Co., Kendallville, Ind.	3
Kelly Co., The O. S., Springfield, Ohio	36
Marseilles Mfg. Co., Marseilles, Ill.	4
Sprout, Waldron & Co., Muncy, Pa.	3
U. S. Wind Engine and Pump Co., Batavia, Ill.	31

Hand Carts (Push)
Charrettes à bras
Carretillas de Mano (de Empuje)
Hand-Schiebekarren

Bradley Mfg. Co., David, Bradley, Ill.	1
Deming Co., The, Salem, Ohio	35
Lansing Wheelbarrow Co., Lansing, Mich.	29

Hand Tools (Shovels, Rakes, Hoes, Scythes, Forks, Etc.)
Outils à main (Pelles, râteaux, houes, faux, fourches, etc.)
Herramientas de Mano (Palas, Rastrillos, Azadones, Guadañas. Horquillas, etc.)
Handwerkzeug (Schaufeln, Rechen, Haken, Sensen, Gabeln, u. s. w.

Harrows (Disc, Spring-Tooth and Spike-Tooth)
Herses (à disques, à dents élastiques, à dents droites)
Mielgas ó Rastrillos (de Disco, con **Dientes de** Resorte y Otros)
Eggen (mit Scheiben-, Federzahn- und **Speichen**zahn-Vorrichtung)

Bradley Mfg. Co., David, Bradley, Ill.	1
Bucher & Gibbs Plow Co., Canton, Ohio	2
Collins Plow Co., Quincy, Ill.	29
Deere Plow Co., John, Moline, Ill.	31
Moline Plow Co., Moline, Ill.	6
Ohio Cultivator Co., The, Bellevue, Ohio	36
Standard Harrow Co., Utica, N. Y.	3

Hay Loaders
Foin (**Chargeuses de**)
Cargadoras de Heno
Heu Auflader

Marseilles Mfg. Co., Marseilles, Ill.	4

Hay Presses
Foin (**Presses à**)
Prensas para Heno
Heu Pressen

Bradley Mfg. Co., David, Bradley, Ill.	1
Collins Plow Co., Quincy, Ill.	29
Ertel Co., George, Quincy, Ill.	6
Ohio Cultivator Co., The, Bellevue, Ohio	36
Standard Harrow Co., Utica, N. Y.	3

Hay Rakes
Foin (**Râteaux à**)
Rastros para Heno
Heu Rechen

Bradley Mfg. Co., David, Bradley, Ill.	1
Moline Plow Co., Moline, Ill.	6

Hay Tools (For Handling Hay)
Foin (**Outils** pour la manipulation du)
Herramientas para Heno (para Manipular el Heno)
Heubearbeitungs-Apparate und Werkzeuge

Myers, F. E. & Bro., Ashland, Ohio	2
U. S. Wind Engine and Pump Co., Batavia, Ill.	31

Hods (Steel and Wood)
Auges (Acier et bois)
Artesas de Cargar (de Acero y de Madera)
Tünchkübel (Mörteltröge, aus Stahl und Holz)

Lansing Wheelbarrow Co., Lansing, Mich.	29

Implement Parts (Rake, Teeth, Knife Sections, Etc.)
Pièces de rechange (Dents de râteaux, conteaux de faucheuses, etc.)
Partes de Instrumentos (Dientes de Rastrillo, Secciones de Cuchilla, Etc.)
Theile von Landwirthschaftsgeräthen (Rechenzähne, Messertheile, u. s. w.)

Incubators
Conveuses artificielles
Incubadoras
Brutmaschinen (Inkubatoren)

Ertel Co., George, Quincy, Ill.	6

Lawn Mowers
Tondeuses de gazon
Segadoras ó Cortadoras de Césped
Rasen Mähmaschinen

Clipper Lawn Mower Co., Dixon, Ill	5
Chadborn & Coldwell Mfg. Co., Newburgh, N. Y	1

Leather (Imitation)
Leder (Imitation)
Cuero (Imitación)
Cuir (Imitation)

Fairfield Rubber Co., The, Fairfield, Conn.	5

Machine Tools
Machines-outils
Herramientas Mecanicas
Maschinen-Werkzeug

Silver Mfg. Co., Salem, Ohio	35

Mowers.
Faucheuses.
Segadoras.
Mähmaschinen.

Mills (Corn and Hominy)
Moulins (pour maïs et bouilie)
Molinos (para Moler Maiz Fino y Grueso)
Mühlen (für Getreide und indianisches Reis, Hominy)

Sprout, Waldron & Co., Muncy, Pa.	3
Standard Harrow Co., Utica, N. Y.	3

Oil Cloth
Toile Cirée
Wachstuch

Plows (Walking, Riding and Disc)
Charrues (ordinaires, à siège, à disques)
Arados (de Caminar, de Montar y de Disco)
Pflüge (Geh-, Fahr- und Scheibenpflüge)

Bradley Mfg. Co., David, Bradley, Ill.	1
Bucher & Gibbs Plow Co., Canton, Ohio	2
Collins Plow Co., Quincy, Ill.	29
Deere Plow Co., John, Moline, Ill.	31
Moline Plow Co., Moline, Ill.	6
Ohio Cultivator Co., The, Bellevue, Ohio	36
South Bend Chilled Plow Works, South Bend, Ind.	1
Standard Harrow Co., Utica, N. Y.	3

Potato Machinery
Pommes de terre (Machines pour la culture des)
Maquinaria para Patatas
Kartoffel-Maschinen

Bradley Mfg. Co., David, Bradley, Ill.	1
Moline Plow Co., Moline, Ill.	6
Standard Harrow Co., Utica, N. Y.	3

Pumps, Hand and Power (Lift, Force and Spray)
Pompes, à main, et à énergie mécanique (Pompes aspirantes, foulantes, pulvérisatrices)
Bompas de Mano y para Fuerza Mecánica (Aspirantes, de Forzar y de Rociar)
Pumpen, Hand- und Kraftpumpen (Hebe-, Druck- und Besprengungs-Pumpen)

Deming Co., The, Salem, Ohio	35
Flint & Walling Mfg Co., Kendallville, Ind.	3
Myers, F. E. & Bro., Ashland, Ohio	2
U. S. Wind Engine and Pump Co., Batavia, Ill.	31

Reapers.
Moissonneuses.
Cosechadoras
Getreide-Mähmaschinen.

Rollers (Field or Road)
Rouleaux (pour champs et pour routes)
Rodillos (para Campo y para Caminos)
Feld- und Weg-Walzen

Bradley Mfg. Co., David, Bradley, Ill.	1
Lansing Wheelbarrow Co., Lansing, Mich.	29
Ohio Cultivator Co., The, Bellevue, Ohio	36
Standard Harrow Co., Utica, N. Y.	3

Rubber Goods
Articles de caoutchouc
Articulos de Caucho
Gummiwaaren

Rubber Tires
Gummireifen
Bandes de roues en caoutchouc
Llantas de Caucho para Ruedas

Morgan & Wright, Chicago, Ill.	1

Scrapers (Road)
Ratissoires (pour routes)
Dragas (para Caminos)
Strassen Scharr-Maschinen (Strassen-Ebener)

Standard Harrow Co., Utica, N. Y.	3

Seeders, Broadcast (Grain and Grass)
Semoirs pour semer à la volée (Grain et graminées)
Maquinas de Sembrar Semillas al Vuelo (**Granos** y Semilla de Yerbas)
Breitsämaschinen (für Getreide und Gras)

Sharpeners and Grinders
Machines à remoudre et à aiguiser
Afiladoras y Amoladoras
Schärfe- und Schleif-Apparate

Sleighs
Traineaux
Trineos
Schlitten

Dapson & Wolf, Oneida, N. Y.	3

Sprayers and Nozzles
Instruments d'arrosage
Rociadoras y Boquereles
Besprengungs-Spritzen und Uebernasen

Deming Co., The, Salem, Ohio	35
Flint & Walling Mfg. Co., Kendallville, Ind.	3
Myers, F. E. & Bro., Ashland, Ohio	2
Standard Harrow Co., Utica, N. Y.	3

Stalk Cutters
Coupe-chaume
Cortadoras de Tallos
Stengel Abschneider

Street Sprinklers
Arrosage des rues (Tonneaux pour l')
Regadoras de Calle
Strassen Bespreng-Wagen

Studebaker Bros. Mfg. Co., South Bend, Ind.	36

Sugar Cultivating Implements
Sucre (**Instruments pour la culture de la canne à**)
Instrumentos para el Cultivo Azucarero
Zucker-Anbau Geräthe

Threshing Machinery
Machines à battre
Maquinaria de Trillar
Dresch Maschinen

Tire Setters
Machines à fixer les bandes de roues
Maquinas de Poner Llantas
Maschinen zum Aufsetzen von Gummireifen

Standard Tire Setter Co., Keokuk, Iowa	36

Tread Powers (Horse, Dog, Sheep, Etc.)
Machines à utiliser l'énergie de la marche (Cheval, Chien, Mouton, etc.)
Motores de Pisada (para Caballo, Perro, **Carnero**, etc.)
Kraft-Tretmaschinen (Pferde, Hunde, **Schafe**, u. s. w.)

Trucks (Hand Warehouse)
Trucs (Emmagasinage à bras)
Carretillas de Mano para almacén
Transport Handwagen (für Waarenhäuser)

Lansing Wheelbarrow Co. Lansing, Mich.	29

Wagons (Business)
Charettes (d'affaires)
Carros (para negocios)
Wägen (Geschäftswägen)

Wagons and Buck-Wagons
Charrettes et charrettes à lessive
Carretones y Carretas
Wägen und Bockwägen

Ohio Valley Wagon Co., The, Marietta, Ohio . . . . . .

Wagons and Carts (Farm)
Wagonnets et charrettes (Ferme)
Carretones y Carretas (para Hacienda)
Landwirthschaftliche Wagen und Karren

Lansing Wheelbarrow Co., Lansing, Mich. 29
Studebaker Bros. Mfg. Co., South Bend, Ind. 36

Weeders
Sarcloirs mécaniques
Desyerbadoras
Jäte Maschinen

Standard Harrow Co., Utica, N. Y. 2

Well Tools and Drilling Machinery
Outils pour puits et machines à forer
Instrumentos para Abrir Pozos y Maquinaria para Horadar
Brunnen-Werkzeug und Bohr-Maschinen

Flint & Walling Mfg. Co., Kendallville, Ind. 3

Wheelbarrows
Brouettes
Carretillas
Schiebekarren

Lansing Wheelbarrow Co., Lansing, Mich. 29

Wheels (Carriage)
Roues (Voiture)
Ruedas (Carruaje)
Räder (Kaleschen und Wagen)

Wheels and Wheel Materials
Roues et articles pour roues
Ruedas y Materiales para Ruedas
Räder und Rädermaterialien

Windmills (Towers and Tanks)
Moulins à vent (Tours et réservoirs)
Molinos de Viento (Torres y Tanques)
Windmühlen (Thurm- und Bütten)

Flint & Walling Mfg. Co., Kendallville, Ind. 3
Marseilles Mfg. Co., Marseilles, Ill. 4
U. S. Wind Engine and Pump Co., Batavia, Ill. 31

Wood Sawing Machinery
Bois (Machines à scierie)
Maquinaria para Aserar Madera
Holzsäge-Maschinen

Marseilles Mfg. Co., Marseilles, Ill. 4
U. S. Wind Engine and Pump Co., Batavia, Ill. 31

Alphabetical List of Advertisers.
Annonces par ordre Alphabétique.
Lista Alfabética de las casas que se Anuncian en esta Revista.
Alphabetisch geordnetes Inhalts-Verzeichnis von Inserenten.

Bradley Mfg. Co., David, Bradley, Ill.	1
Bucher & Gibbs Plow Co., Canton, Ohio	2
Chadbourn & Coldwell Mfg. Co., Newburgh, N. Y.	1
Clipper Lawn Mower Co., Dixon, Ill	5
Collins Plow Co., Quincy, Ill.	29
Columbus Bolt Works, Columbus, Ohio	36
Dapson & Wolf, Oneida, N. Y.	3
Deere Plow Co., John, Moline, Ill.	31
Deming Co., The, Salem, Ohio	35
Ertel Co., Geo., Quincy, Ill.	6
Fairfield Rubber Co., The, Fairfield, Conn.	5
Flint & Walling Mfg. Co., Kendallville, Ind.	3
Kelly Co., The O. S., Springfield, Ohio	36
Lansing Wheelbarrow Co., Lansing, Mich.	29
Leffel & Co., James, Springfield, Ohio	29
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Superior Drill Co., Springfield, Ohio	5
South Bend Chilled Plow Co., South Bend, Ind.	1
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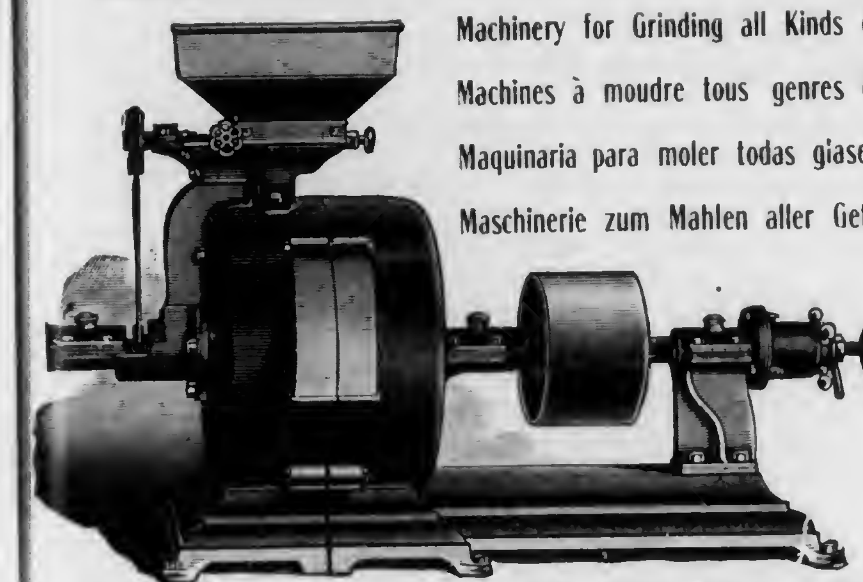


Machinery for Grinding all Kinds of Grain
Machines à moudre tous genres de grains
Maquinaria para moler todas giase de granos
Maschinerie zum Mahlen aller Getreidesorten

Write for one of our booklets which gives a full description of French Burr and Attrition, Feed and Meal Mills, Cotton Seed and Linseed Oil Cake Mills, Emery Rock Mills, Cotton, Ear and Ore Crushers, Magnetic Separators, Corn Shellers, etc.

Ecrivez pour un pamphlet contenant description détaillée de moulins à meules de France et à frottement, de moulins pour grains de cotton et de tourteaux de lin, de moulins à pierre d'émeri, de broyeurs d'épis et de minérais, de moulins magnétiques, d'écosseurs, etc.

Escríbasenos pidiendo uno de nuestros libritos, en que se da una completa descripción de nuestros Molinos de Piedra Francesa y de Roce, para Pienso y para Harina, Molinos de Semillas de Algodón, y para moler Tortas de Aceite de Semillas de Linaza, Molinos para Roca de Esmeril, Trituradoras de Algodón, Mazorcas y Minerales, Separedoras Magnéticas, Desgranadoras de Maiz, etc.

Man verlange eines unserer Büchlein, das volle Beschreibung unserer französischen Mahlsteine und Reibevorrichtung enthält, wie auch aller Futter-Vorrichtungen, Mehl-Mühlen, Baumwollensaamen- und Leinölsaamen Kuchen-Mühlen, Schmirgel-Bergmühlen, Baumwollen-, Aehren- und Erzzerstückelungs-Maschinen, magnetische Separatoren, Korn-Enthülsemaschinen, u. s. w.

SPROUT, WALDRON & CO.

Drawer M. MUNCY, PA., U. S. A.

The Standard Harrow Co.

UTICA, N. Y., U. S. A.

ABERDEEN, SR. SPRING-TOOTH HARROW

Unequalled Strength

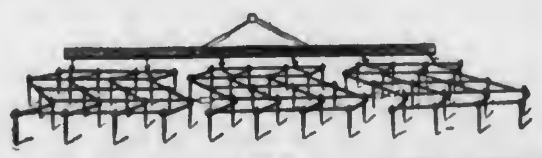
No Clogging

Reversible Points on Teeth

THE STANDARD LINE includes one and two-section Spring-Tooth Harrows and all styles and sizes of Spike-tooth and Disc Harrows, Cultivating Implements, Potato Harvesters, Potato Sprayers, etc., and is one of the most favorably known lines in the leading agricultural countries.

We guarantee prompt service for all export orders. Our factory is only five hours' ride from New York City.

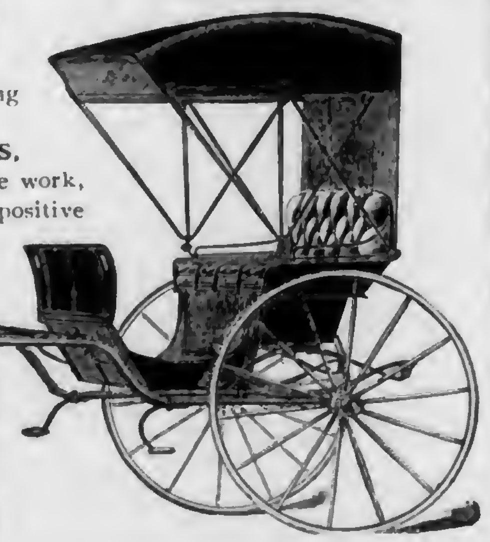
WRITE IN YOUR OWN LANGUAGE FOR CATALOGUE F



ZIG ZAG STEEL SPIKE-TOOTH HARROW

20-Tooth Sections
½-Inch Teeth

EASY RIDING



This two-wheeler is our leading specialty for export.

We equip it with **RUBBER TIRES**, if desired, put on with two wires. The work, like the job itself, is sold under our positive guarantee.

LET US SEND YOU THE PRICES

Dapson & Wolf
ONEIDA, NEW YORK, U. S. A.
WHOLESALE MAKERS OF
FINE CARRIAGES

POTTER'S SPRING BRAKE BLOCKS...

Very substantial. Over 25,000 sets in use throughout the United States. We make them for Steel Tires, and they are especially adapted for Rubber Tires.

Will Not Injure Rubber Tire a Particle

We solicit your correspondence

The Morgan Potter Company
FISHKILL-ON-HUDSON, N. Y., U. S. A.

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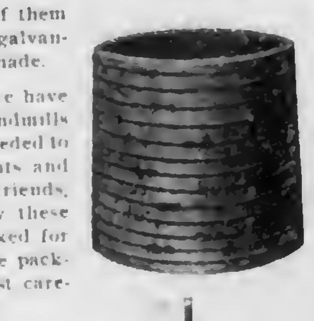

For many years we have been exporting Windmills and know what is needed to meet all requirements and please our foreign friends. We understand how these goods should be packed for safe delivery, and the packing receives our most careful attention. With all the required parts at hand and properly fitted it facilitates the assembling and erecting of the Mills.

We build **Hand and Windmill Pumps** of various designs, all sizes of **Pine, Cypress** and **Galvanized Steel Tanks, Galvanized Steel Towers** any height, **Power Windmills** for grinding feed and running light machinery and **Steel Substructures** all heights, to support Tanks of any capacity.

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Wagons (Business)
Charettes (d'affaires)
Carros (para negocios)
Wägen (Geschäftswägen)

Wagons and Buck-Wagons
Charrettes et charrettes à lessive
Carretones y Carretas
Wägen und Bockwägen

Ohio Valley Wagon Co., The, Marietta, Ohio . . . . . .

Wagons and Carts (Farm)
Wagonnets et charrettes (Ferme)
Carretones y Carretas (para Hacienda)
Landwirthschaftliche Wagen und Karren

Lansing Wheelbarrow Co., Lansing, Mich. 29
Studebaker Bros. Mfg. Co., South Bend, Ind. 36

Weeders
Sarcloirs mécaniques
Desyerbadoras
Jäte Maschinen

Standard Harrow Co., Utica, N. Y. 3

Well Tools and Drilling Machinery
Outils pour puits et machines à forer
Instrumentos para Abrir Pozos y Maquinaria para Horadar
Brunnen-Werkzeug und Bohr-Maschinen

Flint & Walling Mfg. Co., Kendallville, Ind. 3

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Brouettes
Carretillas
Schiebekarren

Lansing Wheelbarrow Co., Lansing, Mich. 29

Wheels (Carriage)
Roues (Voiture)
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Roues et articles pour roues
Ruedas y Materiales para Ruedas
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Windmills (Towers and Tanks)
Moulins à vent (Tours et réservoirs)
Molinos de Viento (Torres y Tanques)
Windmühlen (Thurm- und Bütten)

Flint & Walling Mfg. Co., Kendallville, Ind. 3
Marseilles Mfg. Co., Marseilles, Ill. 4
U. S. Wind Engine and Pump Co., Batavia, Ill. 31

Wood Sawing Machinery
Bois (Machines à scierle)
Maquinaria para Aserar Madera
Holzsäge-Maschinen

Marseilles Mfg. Co., Marseilles, Ill. 4
U. S. Wind Engine and Pump Co., Batavia, Ill. 31

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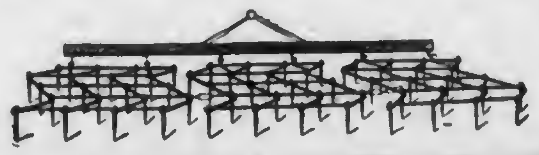

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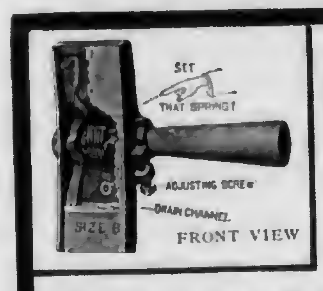

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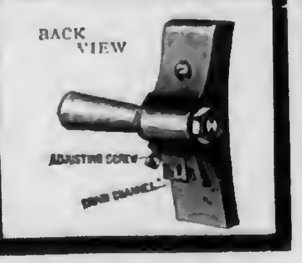

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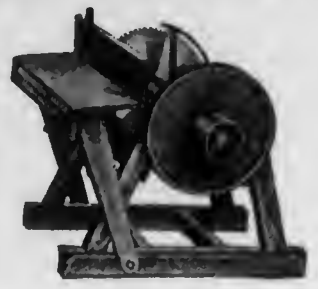
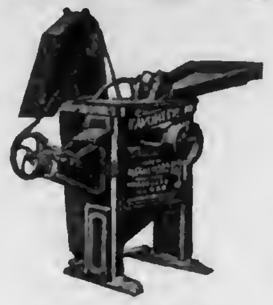
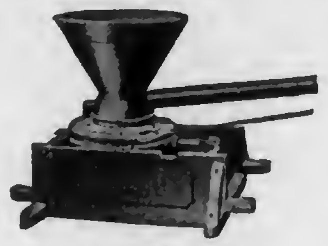
INTENTIONAL SECOND EXPOSURE


WOOD SAWS,
Steel or wood frames.


TWO HOLE HAND CORN SHELLER.

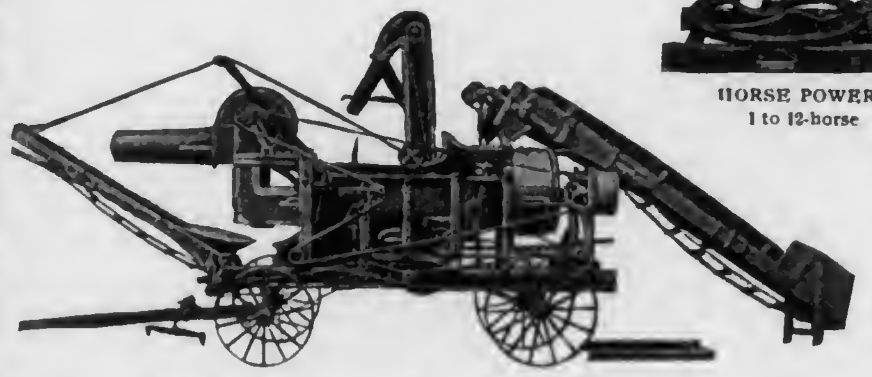

FEED GRINDERS
Sweep or geared.

HAND SHELLER

FARM FANNING MILLS.

HORSE POWERS,
1 to 12-horse

SPEED JACKS.


NEW PROCESS DUSTLESS CYLINDER CORN SHELLER
For husked or unhusked corn, made in three sizes, capacities ranging from 400 to 1,200 bushels per hour.

CYCLONE COMBINATION FORCE FEED CORN SHELLER
All sizes and styles for horse power or engine.

PUMPING JACKS

Address MARSEILLES MF'G. CO. MARSEILLES, ILL. U.S.A. CABLE ADDRESS { A.B.C. Code "ADAMS MARSEILLES"
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Extend your trade beyond the seas

AMERICAN manufactures are not only in demand, but in many cases are given the preference in foreign countries. Especially is this true of Agricultural Machinery, Farm Supplies, Vehicles and Hardware Specialties. If you are manufacturing any of these goods voice it abroad and make the world your field. You can do it just as easily as you can secure home trade if you'll talk through the

Export Implement Age

IT REACHES ALL FOREIGN COUNTRIES
WRITE US FOR ADVERTISING RATES

Superior Grain Drills

Semoirs Supérieurs de Grains. Manufacturés en une grande variété de dimensions pour Grains seulement on pour Grains et Fertilisants mélangés, avec Disque, Houe et Soc creusant les sillons. Nous manufacturons des modèles spéciaux de Semoirs de Grains pour l'Europe, l'Australie, l'Amerique du Sud et le Sud de l'Afrique. Demandez les Catalogues descriptifs illustres.

Sembradoras Superiores de Granos. Se fabrican de muchos tamaños de sembrar Granos sóla ó combinada con Fertilizador, con surcadores de Disco, de Azadón ó Zapatillas. Nosotros fabricamos Sembradoras de tipos especiales para Europa, Australia, Sud América y el Africa del Sur. Envíese por un Catálogo descriptivo ilustrado.

"Superior" Getreiderillen. Wird in vielseitiger Auswahl von Grössen hergestellt: Einfache Getreiderillen und Kombinationen von Getreide und Pflugrillen mit Scheiben, Hauen und Schuh-Lockerungs Vorrichtungen. Wir fabriziren besondere Arten von Getreiderillen für Europa, Australien, Süd-Amerika und Süd-Afrika. Man verlange illustrirte beschreibende Kataloge.

We manufacture special types of Grain Drills for Europe, Australia, South America and South Africa

Made in a large variety of sizes in Plain Grain and combined Grain and Fertilizer, with Disc, Hoe and Shoe furrow openers

THE SUPERIOR DRILL CO., Springfield, O., U.S.A.

THE FAIRFIELD RUBBER CO.

Manufacturers of

Carriage Cloth, Imitation Leather, Etc.

FAIRFIELD, CONN., U. S. A.

We believe you will find our cloths more desirable fabrics than have been presented for your consideration.

Not only do we offer our lines as superior to any, but some are special with us.

We warrant all our goods in every manner, and in all climates.

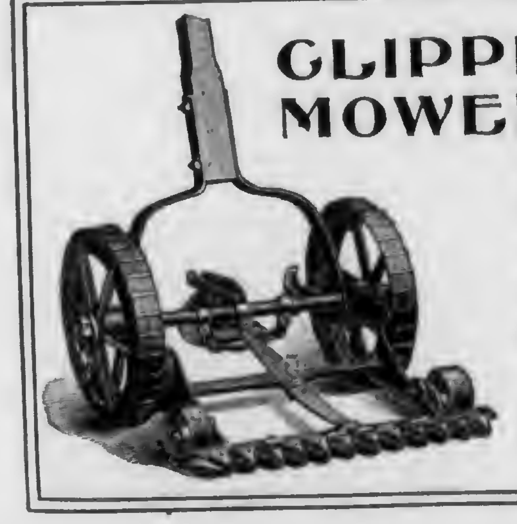
All we ask is a trial of our productions, as we know the result will be in our favor.

Our many years' connection with the foreign trade places us in a position to know fully as to their wants, and the large orders we receive from that field convinces us that the high standard at which we have kept our goods is appreciated. We refer with pleasure to any leading Export house in New York as to the merit of our cloths.

Send for quotations through any Export house, or write us direct.

When ordering goods in our line, ask for goods made by

The Fairfield Rubber Co.



GLIPPER LAWN MOWER GO. DIXON ILLINOIS

THE MOWER that will **kill all the Weeds in your Lawns.** If you keep the weeds cut so they do not go to seed, and cut your grass without breaking the small feeders of roots, the grass will become thick and the weeds will disappear.

THE CLIPPER WILL DO IT

Ask Your Dealer for Them

The Export Implement Age

is an independent journal devoted exclusively to the Export Trade in Agricultural Machinery, Pumps, Wind Mills, Farm Tools, Dairy Supplies and Hardware Specialties.

Advertising Rates Furnished Upon Application

Black Hawk Mill

Wgt 17 Lbs.

GRINDS
Corn, Wheat, Rye, Rice, Coffee, Spices, Etc.

Instantly Adjusted to Grind Fine or Coarse.

WILL DO GOOD WORK AND LAST

Grinding Plates are of the Hardest and Strongest Metals. Can be replaced at slight cost.

Packed in barrels of 12 each. Gross weight, 210 lbs.; net, 204 lbs. Measurement 6¼ cubic feet.

A. H. PATCH, Sole Maker,
Clarksville, Tenn., U. S. A.

Order through any Reliable Commission House.

PATCH'S PATENT

Black Hawk Corn Sheller

Wgt. 15 lbs.

SHELLS FAST.
SHELLS CLEAN.
SHELLS EASILY.

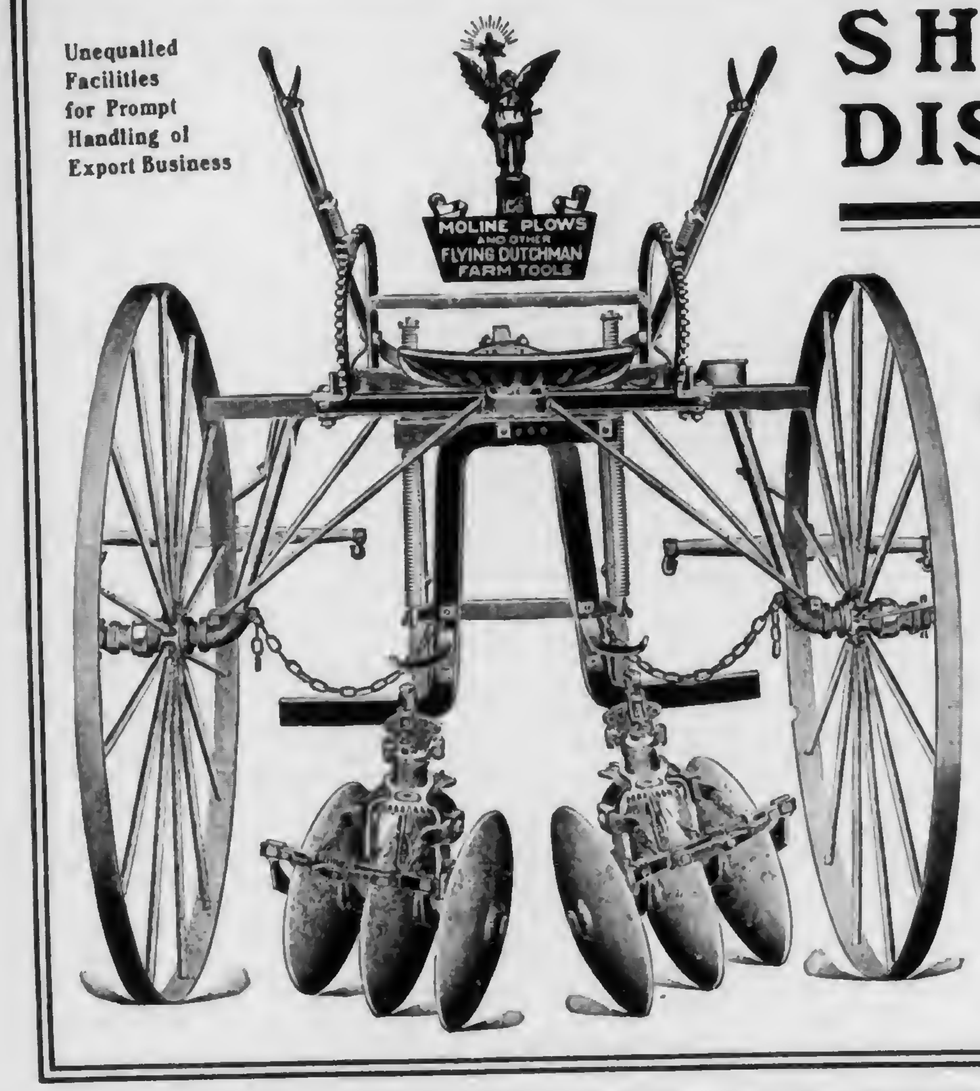
Beware of Imitations

"BLACK HAWK" CORN SHELLER.
A.H.PATCH CLARKSVILLE, TENN.

Capacity 8 to 12 bushels ear corn per hour.

Packed 10 in a barrel. Gross, 180 lbs.; Net, 150 lbs. Measurement 6¼ cubic feet.

MADE ONLY BY
A. H. PATCH, CLARKSVILLE, TENN., U. S. A.



Unequalled Facilities for Prompt Handling of Export Business

SHANGHAI KIDD DISC CULTIVATOR

Forty-six inches from lowest point of arch to the ground. Adjustable in width from 48 to 72 inches. Popular for cultivating Corn, Cane, Tobacco, etc. Packed for export, weighs 830 pounds. Occupies 25 cubic feet of space.

STALK CUTTERS, WALKING AND RIDING PLOWS, DISC PLOWS, DISC HARROWS, PIPE-LEVER HARROWS, CORN PLANTERS AND DRILLS, LISTERS, COTTON PLANTERS, CULTIVATORS—BEET SEEDERS, CULTIVATORS and PULLERS

MOLINE PLOW CO.

MOLINE, ILL., U. S. A.

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Sole Agents for Argentine
Buenos Ayres, South America

MALCOMESS & CO.
Sole Agents for South Africa
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FRONT VIEW
VUE DE FACE
VISTA DEL FRENTE
VORDERANSICHT

37 YEARS building hay, straw, wool, cotton and corn fodder presses should certainly make us experts, and we claim that our presses are the simplest, easiest draught on the team and the smoothest balers on the market to-day.
Our presses will bale from 10 to 18 tons a day in hay.
Our presses will bale from 10 to 15 tons a day in straw.

Depuis 37 années que nous construisons des presses à foin, à paille, à laine, à coton, à fourrage de maïs, nous avons indubitablement acquis une expérience qui a fait de nous des experts, et nous n'hésitons pas à dire que nos presses sont les plus simples qui soient aujourd'hui sur le marché et celles qui fatiguent le moins l'attelage et fonctionnent le plus aisément.
Nos presses emballottent de 10 à 18 tonnes de foin par jour.
Nos presses emballottent de 10 à 15 tonnes de paille par jour.

Despues de 37 años que construimos prensas para heno, paja, lana, algodón y forraje de maiz tenemos que ser expertos en ese ramo, y por lo tanto reclamamos que nuestras prensas son las más simples y las más livianas para el acarreo por parejas de caballos, y las enfardadadoras mejores que existen hoy en el mercado.
Nuestras prensas enfardan de 10 á 18 toneladas de heno por dia.
Nuestras prensas enfardan de 10 á 15 toneladas de paja por dia.

37 Jahre ununterbrochener Fahrikation von Heupressen, Strohpressen, Wolle- und Baumwollenpressen, wie auch Maisfutter-Pressen, sollte uns wahrlich in den Stand gesetzt haben, Experten dieser Branche geworden zu sein; wir beanspruchen deshalb für unsere Pressen, dass sie die einfachsten in Konstruktion sind, beim Gespann den leichtesten Zug haben und zum Emballiren die vorzüglichsten Dienste leisten. Unsere Pressen sind im Stande 10 bis 18 "Tonnengehalt" Heu und 10 bis 15 "Tonnengehalt" Stroh täglich zu emballiren.

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Catalogue franco sur demande
Catálogo Gratis
Kataloge frei

Our "Gem" Full Circle

We make a line of both Full Circle and Half Circle Presses.
Prices, f. o. b. cars New York City, on our Gem Full Circle Balers, properly crated for export:

	Net Weight.	Gross Weight.	Space	Prices.
14 x 18 Baler	2,650 (1,457 Kilos)	3,700	115 cubic feet	$215.25 (£44 16.10)
16 x 18 Baler	2,775 (1,526 Kilos)	3,800	171 cubic feet	218.00 (£45. 8. 4)
17 x 22 Baler	2,975 (1,636 Kilos)	4,000	120 cubic feet	221.50 (£46. 3. 0)

Notre presse "Gem" à cercle entier

Nous fabriquons un assortiment de presses à demi-cercle et à cercle entier.
Prix de nos presses "Gem" à cercle entier, mises en wagon à New York et convenablement emballées pour l'exportation:

	Poids net.	Poids brut.	Espace.	Prix.
Presse 14 x 18	2,650 (1,457 kilos)	3,700	115 pieds cubes	$215.25 (£44.16.10)
Presse 16 x 18	2,775 (1,526 kilos)	3,800	171 pieds cubes	218.00 (£45. 8. 4)
Presse 17 x 22	2,975 (1,636 kilos)	4,000	120 pieds cubes	221.50 (£46. 3. 0)

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16 x 18 Presse	2,775 (1,526 Kilo)	3,800	171 Kubikfuss	218.00 (£45. 8. 4)
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EXPORT IMPLEMENT AGE

Vol. XIII. Philadelphia, Pa., U. S. A., March, 1906. No. 6.

Half a Century in Development of Labor Saving Machinery

A recent issue of *The Iron Age* celebrates the semi-centennial of that paper, and very naturally indulges in a deal of retrospect, and therein sums up the story of the steam engine as follows:

"The birth of the steam engine long antedated the period under review, but it was almost in its infancy fifty years ago, and the progress since 1855 covers more ground than lies between the Marquis of Worcester in 1633 and James Watt in 1782—more, indeed, than between Watt and Corliss in 1849. To follow its development would be interesting, but to little purpose in this connection. Only one fact of exceptional significance needs to be referred to here—the working out during the past half century of the cycle of progress in prime motors from the simple, through the almost infinitely complex, and back to the simple, in almost the original form of steam utilization for power purposes.

"The beginnings of the steam engine are found in the Aeolipile of Hero of Alexandria, in which a sphere into which steam was admitted through hollow trunnions and escaped through arms terminating in contracted nozzles set at right angles to the axes of these arms was caused to rotate by the resistance of the air to the steam escaping from these nozzles. It was exhibited at the Serapeum, in Alexandria, in the year 150 B. C. In 1679 A. D., Branca, in Rome, described his "wheel" —a device in which a jet of steam was directed against the vanes of a wheel revolving in a horizontal plane and which was thus caused to rotate.

"Throughout most of the Nineteenth Century, but especially in its latter half, the steam engine was refined almost to the point of sublimation. The greatest mathematicians and mechanicians of the period studied its problems, and year by year it was improved and differentiated until, so far as the reciprocating engine was concerned, it seemed as if any further effort in the direction of economy would defeat its purpose through increase in initial cost. Indeed, it looked as though the steam engine had been made as nearly perfect as human ingenuity could make it, but about 1884 a new type of prime motor made its appearance and began slowly to gain the confidence of those who at first regarded it much as the designer of hydraulic pumps regards the pulsometer. This intruder into the field of steam engineering was the steam turbine, which has had the most remarkable development within a few years, scarcely more than ten, that has ever been witnessed in this field of effort. It is pushing the reciprocating engine out of many of its most important uses.

"Thurston, in one of his latest contributions to technical literature, said: 'Probably never in the history of engineering was so simple a machine made the object of investigation by so large a number of able men, inventors, constructors, engineers and men of science, and the subject of such extensive experimental research. It is very possible that through the development of this ancient device we may yet see the nearest approach to ideal thermo-dynamic and mechanical efficiency in the group of heat motors that man can attain.'

"Of what the half century has given us in labor-saving machinery it is possible to speak only by examples. In 1855 there was not a typewriter in commercial or editorial use in the United States. There were few, if any, thus employed much prior to 1875. In business correspondence the pen-written letter is now almost as much of a curiosity as was the letter printed in capitals of the primitive typewriting machines up to 1870, and for some time thereafter. Much the same is true of the sewing machine. First made approximately practical in 1846, it was not adapted to general use until about 1850. The great development of this industry was all within the last quarter of the nineteenth century.

"On the farm the only labor-saving machines used up to 1855 were of the crudest and simplest types. Invention had, however, been busy in meeting the needs of the farmer. In a competitive test held in France in that year only three forms of reapers were entered, and as might have been expected, the American machine took the honors. It cut an acre of oats in twenty-two minutes. The English machine needed sixty-six minutes, and the French, seventy-two minutes. This ratio of effectiveness has been fairly maintained ever since. With the aid of highly developed machinery the great expansion of agriculture in the West has nearly all been within the past twenty-five years, with results of incalculable importance as affecting the growth and prosperity of the Republic."

THOMAS EDISON

Thomas Edison often dates the beginning of his career from the time he saved a boy's life. The father of the boy was a station agent and he rewarded Edison by teaching him telegraphy. Yet even before that Edison had begun systematic hard work. He went from Erie County, Ohio, to Detroit, Mich., and when he was eleven years old he tried to read Newton's "Principia." It proved difficult, and in order to prepare himself to master its difficulties Edison decided to read through the Detroit Free Library. He was prevented from doing this by the necessity of going to work. He became a train boy, and in addition to selling papers he ran a little newspaper on the train and established a little laboratory in the baggage car. When the conductor discovered the boy's experiments he struck Edison on the side of the head—a blow that later resulted in deafness. Soon after that, Edison obtained a position as telegraph operator. One of the first devices he made was an arrangement whereby the clicking of the telegraph receiver would cause a bucket of water, carefully suspended, to tip over. If Edison was tired and wished to snatch a few moments' repose, he was always certain of being effectively awakened in case a message came. He wandered over the Middle West and through Canada, and then he came to Boston. Here he received his first lesson in the matter of inventions. He patented a voting machine, but no one wanted it; and the only good it did him was to teach him that the only thing worth patenting is the thing people wanted. He worked hard, and among other things discovered a method of sending two or four messages over the same wire, thereby making an enormous saving for the telegraph companies. Though he had already done much good work, he was poor when he arrived in New York. But there what he calls his greatest faculty, that of seeing what should be done and knowing how to do it, came again into evidence. The machinery of the Gold and Stock Telegraph Co. had broken down and no one present could fix it. Edison wandered into the building and instantly laid his finger on the difficulty. He was given a place at once. A short time later he received forty thousand dollars for an improved stock printer. Since then he has taken out scores of patents, many of which have covered great advances in science.

OUR PRESIDENT

President Theodore Roosevelt did not have to overcome the handicap of poverty. But he had a worse one. As a child he suffered from that most persistent, tenacious and depressing disease, asthma. He set out doggedly to conquer it, and he succeeded. In all probability that fight was the hardest he ever put up, and when it was over he found he had not only been successful in overcoming the malady, but he had also acquired a tremendous stock of health and energy that served him well in the future. The experiences he underwent were later used in the books, and it is evident that he looked at first upon his political work as secondary to his literary undertakings. Early in the nineties, talking with a friend, he casually remarked: "In 1899? Why, in that year I shall be a middle-aged literary man." He was serious in making that statement. Yet before the last decade of the nineteenth century was finished he fought in several big political campaigns, became Assistant Secretary of the Navy, served in the Spanish-American War, was elected Governor of New York, and Vice-President of the United States. Then when President McKinley was struck down, Theodore Roosevelt succeeded him as President. So in addition to being a middle-aged literary man, he was also a big factor in later-day history.

An Event in the History of a Representative American House

Mr. William H. Caldwell, of the Chadborn & Caldwell Mfg. Co.,Newburgh, New York, was recently tendered a very beautiful and sincere tribute by the officials and employees of the company, who presented him with a handsome Masonic watch charm as a testimonial not only of their appreciation of his executive ability, in being largely responsible for the development of the company's business until it occupies a foremost place as manufacturers of lawn mowers, both at home and abroad, but the presentation was also an evidence of the very great affection with which Mr. Caldwell's kindly personality has caused him to be regarded by all of his associates and employees. The event, therefore, was a signal celebration of good will in which all had a share. The home paper, the *Newburgh News*, gave the following account of the presentation:

The presentation took place in the lawn mower works at Lander and South Williams streets. At 9 o'clock the power was shut off and the employees assembled on the second floor of the big structure. Mr. Coldwell was then summoned from the office, and the gift was presented by Mr. Albert W. Mapes, who said:

"Looking at the number of people here assembled, my mind naturally runs back to the beginning of this organization, about fourteen years ago. Not one of the men who were present at the launching of the enterprise are now here, except you and I. We only are left here of the pioneers who fought hard for the success of the new company. Of course, we cannot think of those days without bringing to mind the president, your honored father. Before we had our factory built, the dangerous and panicky times of '92 and '93 came upon us, and we saw our labor and our capital going into a seemingly bottomless pit until it appeared as though there would be nothing left: but the indomitable will of your father served to strengthen us all and encourage everyone of us to keep on putting in until we should begin to find a bottom to stand upon. That his optimistic views were correct is now apparent to everyone, and the little shop with a few men has grown to the proportions of the large factory in which we now work, and the splendid force of men by whose work and loyalty we are now enabled to turn out as many as five hundred mowers per day.

"We have the largest and by far the best equipped lawn mower factory in the world, and, I may add, the best manned factory. Beginning our enterprise with nothing, after England had been making lawn mowers for over sixty years, we are now producing each year more than double the number of mowers made by all the English manufacturers combined. I do not speak of this boastingly, but to show that, despite obstacles grave enough to discourage most men, we have been enabled to snatch success from almost defeat, very largely by means of the hearty co-operation of the entire force of employees.

"Those in charge of the management of the business have always been glad to acknowledge this and to render to every man praise due for faithful and loyal support. Upon the other hand, there have not been wanting on the part of the men evidences of their appreciation of the responsibilities and work of the managers.

"When, some two years ago, it became evident to all of us that he who had been our leader must soon be called upon to lay down his working tools, our thoughts naturally turned to his successor. There was but one thought as to who should take up the task, as you had from the first been so thoroughly identified with the details of the work, and had shown such an aptitude for it, and at the same time such a wide view of its possibilities and its necessities. You will remember that you were then authorized by the directors to use your own judgment in affairs, they promising that they would stand by you in it.

"At the same time, the men in the shop have not been slow to see and appreciate your worth as an organizer and director, and they have come to highly esteem you for your interest in their personal welfare and well-being, as well as for your zeal for the good of the company. This has been manifested on several occasions and in various ways. They have now asked me to voice their feelings in this matter, and while I have consented, I can but be reminded of the oldest girl in Kate Douglas Wiggins' 'Bird's Christmas Carols.' When given charge of a whole brood of children and told to see that they behaved properly at the Christmas dinner, she said she 'just did not want to go at all. It would be hard enough to mind her own manners, but to mind the manners of the whole family was entirely too much.' I might possibly express my own esteem for you, but to try to express it for all these, I simply can't do it. I can only say that they have all taken a lively interest in what concerns you. For instance, when a short time since, you were elected president of the Business Men's Association and the papers printed such glowing prophesies as to the future of the Association under your competent leadership, every man felt larger and prouder for it, as though it were a personal compliment. Again, when, a few days since there came upon you so suddenly that terrible cloud that seemed to threaten the removal from you of your only son, every man in the shop felt it as a personal bereavement that was imminent, and earnest wishes and fervent prayers went up for the boy's recovery. Now that the kind hand of Providence seems to have removed the disease, and you have him again under your own roof they will rejoice with you in the brightening prospects.

"Having, then, this interest in your welfare and this esteem for you, they wish at this time to voice it by asking you to accept a slight token of their appreciation. It is the combined offerings of all, and united it becomes this valuable charm. They hope you will receive it and wear it with as much pleasure as they have in giving it to you. Let it not only bring to your mind those sublime lessons which you have lately been taught in the orders to which you have been initiated, but let it also remind you that right here in our own factory there are many loyal hearts that are looking to your future with intense interest and bright hopes."

Mr. Coldwell, in accepting the charm, said that he and the men had been long enough together for them to know that he was no speechmaker. He thanked the employees very much, and assured his hearers that there was no body of men from whom he would appreciate the gift half as much as from the men in the shop.

The charm is of gold, with onyx facings, and is set with nine diamonds and eleven rubies. One side represents the Knights Templar emblems, while the reverse represents the emblems of the 32d degree, Scottish rite, the eagle opening on a hinge and revealing the insignia.

Freight Train in Northern Africa.

Freight Bound for Bagdad.

A Study of British Prospects in the Trade of the World

We have read with great interest an article reviewing the present conditions in the United Kingdom and the commercial and industrial prospects of the British people. The article was written by Mr. Edward James Cattell for *Commercial America*, a publication issued by the Philadelphia Commercial Museums. Mr. Cattell is a student of trade conditions, and has an exceptional faculty of presenting the reasons for his conclusions, which are founded on the history and development of the nation and its relations, friendly and unfriendly, with all the world. Mr. Cattell says:

A suggestive series of events has made the United Kingdom an object of special interest in the opening days of the new year, and questions touching the commercial and political policies likely to find favor with the new Government led by Sir Henry Campbell-Bannerman are being asked with anxiety in every great trade center. For this change in governmental control at the heart of the British Empire has come at a time when a nation which has long led the world in foreign trade, has surprised that world with an immense gain in both the volume and value of its foreign commerce; this change of political leaders occurs also at a time when the influence of important trade legislation is just beginning to make itself manifest, at a time also when many traditional friendships, and enmities have suffered a surprising transformation.

In nearly every recent work of the first importance treating of England's future, stress has been laid upon her declining exports and increasing imports, while attention has been drawn to her loss of foreign markets, to the partial, or in some instances, complete, paralysis of a few of her leading industries. This dark picture of industrial conditions has been further emphasized by a political forecast based on a summary of existing political conditions which made the British Empire the implacable foe of France, her nearest neighbor; the friend of Germany, whose colonial ambition was likely to involve the Empire in new troubles and expense; it gave prominence to the necessity laid upon the British authorities to expend immense sums in preparing for an impending attack by Russia, the most powerful factor in Europe, upon her Indian frontier. This exceedingly grave situation was, according to prophets both English and Continental, further darkened by the certainty that England, in the inevitable dismemberment of China, would be forced to fight single-handed to preserve her vast trade interests in the Yangtse Valley.

What is the actual situation to-day? The new year finds France and England in closer sympathy and a more perfect working agreement than has been known for generations. Germany is estranged and all possibility of united action between the British and German authorities in the matter of expansion of empire is beyond the range of the possible. Russia has received a check in her policy of Eastern extension which removes for a generation at least all menace to India, while last, and most important, the close offensive and defensive alliance between the British authorities and Japan renders it as certain as any treaty covenants have power to ensure, that the integrity of China will be preserved and the existing divisions of territorial influence in Asia be maintained.

In the matter of economic conditions an equally surprising change in the situation has developed during the past two years. Instead of showing a continuation of declining exports and increasing imports, the year 1904 surprised the pessimistic by disclosing a gain in both imports and exports, exports, however, showing twenty-five per cent. larger gain than imports. The eleven months of 1905, already of detailed record, intensify this favorable trend of trade. For in this period of eleven months we have another very heavy increase in the total of foreign trade, the increase of exports as compared with increase of imports, being as three to one, such increase in exports showing in the eleven months a gain over the favorable figures in 1904 amounting to more than one hundred and seventy-five million dollars, indicating that the year 1905 will show a net gain in exports alone almost equal to the total imports of the empire of Japan. This gain in exports, moreover, has been in those very lines of manufacture which the home and Continental critics recently declared were already started on a period of decline that would run quickly to the point of extinction. A country whose people are thus able in the short period of two years to reverse the whole trend of their foreign trade, and, armed with new weapons, re-enter the battle for commercial supremacy with prospect of success greater than that won in times past, certainly offers a field for careful study, certainly suggests the thought that somewhere in the constitution of the people, or the motive which dominates the general habit of their life, may be found that which is the secret of this wonderful recuperative power. At the first step in such a review we come naturally to the physical features of this land, home to such a wonderful body of skilled labor and organized industry, and consideration of physical features brings us face to face with the curious resemblance which exists between the physical configuration and the general environment of the two parties to the British and Japanese alliance.

THE BRITISH ISLES.

Both the empire of Japan and the United Kingdom are represented by a group of islands forming a breakwater to a great continent; the range of the British islands from the south of England to the north of Scotland is practically identical with the range of Japan from the south of Kiushiu to the north of the Mainland or Nippon. The area of England, Wales, Scotland, and Ireland is about ten per cent. more than the three larger islands of Japan, Nippon, or the Mainland, carrying about fifteen per cent. more population than England and Wales. Each is separated from the territory of two great continental powers by a sea of equal size, the Sea of Japan separating Japan from Korea and Russia, the North Sea and the English Chan-

PALM BEACH, FLORIDA.

The daily March pastime of those who enjoy outdoor sports in the genial sunshine of Florida where winter is modest and the Atlantic breezes blow softly.

nel separating the United Kingdom from France, Germany, Norway and Sweden. The Bay of Biscay occupies the relative position to the United Kingdom that the Yellow Sea does to Japan. With both bodies of territory there is, on the one side, sea communication with a near-by continent, populous and important, and on the other a long ocean voyage to another immense body of population and trade. Each resident body of population, although in widely different lines, has proved, by more than a thousand years of trial, exceptional skill in the manipulation of raw materials and the production of a wide range of manufactured articles. In each case, the people are familiar with the sea and love it. In the United Kingdom no inland point is farther than seventy miles from the sea. In Japan practically the same average holds good.

Passing now to a closer study of the physical features of the United Kingdom, it may be said that the combined area of the United Kingdom is a little less than that of the territory of New Mexico, nearly twice that of the New England States, and fifteen times that of the State of New Jersey. In Europe her area falls a little below that of Norway, but is ten per cent. larger than that of Italy. In a South American comparison, she shows a little greater territory than Ecuador, in an Asiatic comparison, her teritory measures only one thirty-fifth that of China, but it is about the same as that shown by the Philippine Islands. The islands forming the United Kingdom are peculiarly happy in climatic conditions, although their climate is the perennial subject of abuse by both natives and visiting foreigners. It is said that within the United Kingdom outdoor labor or exercise is possible on a greater number of days than in any other country in the world. It is certain that, relieved from the strain of violent and severe variations in temperature and free from the handicap of long periods in which outdoor exercise, work or play, is uncomfortable, the people as a whole have become wedded to those pleasures in the open which have made them an energetic, and, in the main, a healthful people, a national endowment of incalculable value when it is remembered that many of the sources of British wealth are occupations which put a heavy strain upon the constitution of the individual worker. Favorable climatic conditions also have had a direct and stimulating influence upon the growth of several important industries; the moist climate of Lancashire has made it possible to spin cotton with greater profit; the peculiar climatic conditions of Ireland have enabled her for years to remain the premier linen bleaching country, a country to which even Continental nations forward their home manufactured linens to be bleached.

THE RIVERS AND HARBORS.

A generous supply of navigable rivers has been a great aid to industrial development, for such rivers, as a result of extension or connection by canals, form to-day an important part of the internal transportation system, in certain districts enabling heavy manufactures, or manufactures likely to suffer from rough handling, to be cheaply and safely conveyed to the chief ports. England and Wales, although representing an area less than that of New York and New Jersey, possess sixteen rivers which play a part in transportation work, ten flowing into the British Channel and six into the Irish Sea—the Severn, two hundred and twenty miles in length; the Thames, two hundred and fifteen; the Trent, one hundred and eighty; the Ouse, one hundred and fifty; the Mercey, seventy; the Tyne, thirty-five.

A physical feature which also has played an important part in trade development is the long eastern coast line facing the Continent—a coast rich in harbors so distributed that all sections of the Kingdom are equally well-served, not only in the matter of foreign trade facilities, but with points from which the one hundred and seven thousand men and twenty-five thousand boats are engaged in deep sea fishing can profitably conduct operations. That physical feature, however, which has played the most important part in the development of British trade, home as well as foreign, is the location of immense iron and coal deposits in the same districts, many such deposits being situated within a few miles of the sea, so that land transportation charges are reduced to a minimum.

A Typical Street in a Typical City of the West Indian Tropics, Laid Out Before the Era of Luxurious Carriages.

The population of the United Kingdom, which to-day numbers about forty-three million, shows a preponderance of females over males in excess of a round million. England and Wales contain more than seventy-eight per cent. of this population, Scotland and Ireland standing nearly equal, with eleven per cent. each. Taxing records show eight million inhabited houses. In England seventy-seven per cent. of the population is urban, and twenty-three rural, in Scotland eighty per cent. urban and twenty rural, in Ireland thirty-one per cent. urban and sixty-nine rural. The largest center of population is London, the great port, manufacturing, banking, and trading center, with six million; Glasgow, port, manufacturing and shipbuilding center, with seven hundred and seventy-six thousand; Liverpool, the leading port for over-sea textile traffic, seven hundred thousand; Manchester, the trade center of the Lancashire textile industry, five hundred and fifty thousand; Birmingham, home of iron and steel manufacturing, five hundred and twenty-eight thousand; Sheffield, cutlery and hardware, four hundred and eighteen thousand; Dublin, three hundred and eighty thousand; Belfast, three hundred and fifty-eight thousand; Bristol, three hundred and fifty-four thousand; Edinburgh, three hundred and twenty-three thousand.

THE SKILLED LABOR POPULATION.

From a commercial point of view, the section of this population most worthy of consideration is a body of skilled labor comprising, in round numbers, five million individuals, all engaged in industrial occupations. This present day body of skilled labor is product of an evolution running through a thousand years, during which in many instances son has succeeded father in the same line of occupation, or one closely akin to it, receiving from that father trade secrets and a special training based upon the experience of a life time of labor. It has also underlying it the initiative power, and the conserving influence of skilled labor drawn from foreign lands, skilled labor which became a part of the British industrial plant either by direct invitation of the sovereign or as a refuge from home persecution by church or state. A typical example is that of the woolen industry, for when King Edward III realized that the export of wool from England was helping rival nations on the Continent to increase their wealth, he not only issued an edict prohibiting the exportation of wood, but invited to the country an important body of Flemish weavers that his home industry might be directed into the more profitable field of high-class manufactures.

This body of five million skilled laborers is distributed as follows: One and a half million in iron and steel manufactures, seven hundred thousand in cotton, two hundred and sixty thousand in woolen, one hundred and ten thousand in flax and linen, nine hundred thousand in mining, four hundred thousand in leather, one and a quarter million in building, one hundred and forty thousand in brick and tile, sixty thousand in chemicals. In addition to this body of skilled labor there are more than two million laborers engaged in agriculture, and one hundred and seven thousand in fisheries. A distinguishing feature of Britain's skilled labor is, as has been before suggested, its ability to take up a new industry when the old one has become worked out. An instance in point is furnished by the circumstance that the first linen spinning mill in Ireland was built on the ruins of a cotton mill, and the linen industry would not have had its rapid development but for the fact that a body of skilled labor was released by the decline in the cotton spinning industry. This incident has been repeated scores of times, either where the line of manufacture has dropped out of the list of profitable productions, or a section of country has ceased to offer special facilities to a certain industry. Moreover, this skilled labor is a peculiarly fluid body; the people live chiefly in rented houses, there is no menace to health in change of home, such as a great difference in climatic conditions, neither is there necessity for a long journey between places of new and old employment. Further, and perhaps the most important feature in the whole situation, the value of this large army of skilled laborers is greatly enhanced by the fact that, as a result of bitter struggles between organized capital and organized labor in which both suffered severely, there has developed mutual respect and the establishment of conciliation and arbitration boards of wide and continuing influence. One such board has maintained industrial peace in a great trade for nearly thirty years.

Asleep in the Desert and Mountain Wilds of Central Asia, a Region Which Some Day Will Awaken to the Voice of Enterprise and labor.

THE BRITISH GOVERNMENT.

In passing it may be said that the government of the United Kingdom is in fact, as well as name, a limited monarchy, actions of the sovereign being, even when they savor of the arbitrary, in the great majority of cases, based upon a carefully formed estimate of the public will. Moreover, the House of Lords, which numbers about six hundred members, although known as an hereditary House, is being continually brought in touch with the spirit of the times by elevation to the peerage of men noted for their success in the great world of commercial affairs. It is composed of five different classes, peers who sit by right of birth, peers created by the sovereign, peers who sit in virtue of their office, certain peers who are elected to sit for life, such as the Irish peers, and others who are elected to sit for one Parliament, as the Scottish peers. The House of Commons, where practically all legislation originates, consists of six hundred and seventy members, elected by the people on a broad franchise covering seven million voters, or about one-sixth of the total population. England and Wales furnish four hundred and ninety-five members of this popular legislative body. No member of the House of Lords is allowed to take part in an election for members of the House of Commons, so jealously do the people guard the constitution of this popular body. The Cabinet, which is child of the House of Commons, because forced to resign when it fails to hold a majority vote, has no fixed limit as to numbers, but the present Cabinet contains nineteen members.

To sum up the situation, at the heart of the British Empire the new year opens with a feeling of optimism based largely on the fact that the year 1905 has shown the greatest foreign commerce in the history of the United Kingdom. This optimism is based also on the circumstances that during the past seventeen months the percentage of increase in exports has been greater than the increase in imports, the proportionate gain in exports increasing as the months passed. This gain in exports has been, moreover, in those lines of merchandise which represent the largest investment of capital and the widest employment of population. The great cotton manufacturing industry, which represents an investment of nearly one thousand million dollars, and an annual output valued at five hundred million dollars, has just closed one of the most prosperous years in its history, and the familiar talk about the closing down of cotton mills has given place to the issue of a list, during the latter days of December, showing particulars of sixty new mills involving an investment of over thirty million dollars and promising work to thirteen thousand new operatives. On the other hand, ninety cotton spinning companies which showed in 1902 a loss of over two hundred thousand dollars, promise for 1905 profits equal to nineteen per cent. on their share capital.

THE INCREASE IN EXPORTS.

Increasing export of manufactured product during 1905 having given increased employment to a large section of the population, there has ensued a period of freer spending on the part of the masses, and a more generous home consumption. While it is true that the old rule holds good that one in forty of the inhabitants of the United Kingdom is a recognized pauper, it is claimed by those in authority that a large proportion of the army of unemployed centering in the great cities consists of men who are unable to do work, with a smaller proportion of men who are unwilling to work. Although during the past year the Continent has been the scene of some political unrest in several large nations, and of something approaching revolutionary anarchy in the territory of one great power, the money market in London has remained practically undisturbed, fully able to supply home demands. It is even of record that the bill brokers last month reduced interest paid upon deposits, this being the first time such a reduction has occurred in the month of December for many years. The skilled labor outlook is without signs of serious disturbance, recent legislation in the interest of the working class, such as the Alien's Exclusion Act coming into force on the first of January, Employers' Liability Act, acts furnishing cheap trains for working men, together with the recent elevation to Cabinet position of a leading trade unionist, promises a year of peace between capital and labor. Producing conditions and home consumption, it would thus appear, present a favorable appearance. What of over-sea or foreign trade? There are clear signs of renewed activity on the part of British exporters due, it is said, in part, to criticism of their methods during recent years by the press at home and abroad; such exporters are encouraged to new activity, moreover, by the fact that the alliance between the British Empire and Japan, supplemented by the understanding with France, is generally taken to ensure a peaceful year in both Orient and Occident.

In short, the opening days of the new year show the greatest as well as the oldest of the trading nations entering the fight for competitive world-trade confident of spirit, with less friction in her great industrial plant, and an outlook practically clear of foreign complications. The lesson taught by the zealous tax gatherer during the South African War has borne fruit in a multitude of small economies making for individual thrift and national betterment. Increased earning power of the people, coupled with this new born thrift, has almost restored the loss of capital resulting from that war. Once more British capital is flowing freely into foreign lands. While the general election promises during the early months of the present year, temporary disturbances in certain sections of the country or lines of manufacture, the circumstance that the new Secretary of State for Foreign Affairs holds views in the main similar to those which shaped the policy of his predecessor, and the further circumstance that the Liberal ministry now in power is a combination of labor leaders, with representatives of the immense capital invested in banking, shipping, mining, and manufacturing, renders it certain that no radical legislation will take place in the near future of a nature to disturb international commercial relations.

ELECTRICAL GUNNERY DEVICE

A Berlin paper says that a Hungarian inventor has produced an electrical apparatus that will enable one man to operate accurately all of the guns on a warship. After the first trial it is said that orders were given by Great Britain, Germany and Russia.

PASS IT ON

Go, breathe it in the ear
Of all who doubt and fear,
And say to them, "Be of good cheer."
—*Longfellow.*

EXPORT IMPLEMENT AGE

FOR CIRCULATION IN FOREIGN COUNTRIES ONLY.

An Independent journal devoted exclusively to the Export Trade in Agricultural Machinery, Pumps, Wind Mills, Farm Tools, Dairy Supplies, and Hardware Specialties.

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In many countries the question of labor on a farm is becoming most important. Of course, this adds to the value and demand for agricultural machinery. A study of American machines and implements shows, especially within the past few years, that the average horse can do more and better work in a day with the same effort, and, in fact, with less, than formerly. A farm equipped with the most modern American machinery can be operated at a minimum of expense and with the least possible human labor.

AN APOLOGY

In our February issue we printed an interesting article entitled "Philadelphia's Money Factory," and through an unintentional oversight we neglected to give proper credit for it, which belongs to a Philadelphia publication, *Commercial America*, published by the Philadelphia Commercial Museums. This was a very able article, indeed, and along original lines, which makes it all the more unfortunate that due credit was not given together with its publication. We hope that this notice will in some measure make amends.

NATIONAL FINANCES

From the annual report of the Secretary of the Treasury, it appears that the revenues of the government for the fiscal year 1905 amounted to $697,000,000, and the expenditures to $720,000,000, leaving a deficit of $23,000,000. Thus far in the current fiscal year there has been an increase of 14 per cent. in the customs revenues and of five per cent. in the internal revenue. Taking this increase into account, the Secretary estimates the receipts of the fiscal year 1906 at $738,000,000, and the expenditures at $746,000,000, leaving a deficit of $8,000,000.

NEW GERMAN CABLE

Consul Liefield, of Freiburg, reports that Germany has completed the laying of a new cable extending from Shanghai to Yap in the Caroline Islands, a distance of over 2,000 miles. The cable is laid at the greatest ocean depth of any in the world, and closes a gap that makes it the first continuous non-English line to encircle the globe. The consul also gives some interesting information as regards other cable lines: He says:

The year 1905 has been for the German cable industry a very significant one, for it not only gave to Germany a great many new cables, but the advantages and advancements made in sea cable technic can be said to have been in every respect first-class. It is claimed that the rapidity and precision with which the newest German cable from Shanghai to Yap, in the Caroline Islands, was laid, which had been finished and already for use on November 1st, are unexcelled.

UNCLE SAM'S EXPORTS

Uncle Sam's leading markets, next to the United Kingdom, Germany and France, are Belgium and the Netherlands, almost the smallest of European countries. The United Kingdom is the largest European purchaser of American commodities, Germany next, then France, then the Netherlands, then Belgium. The total exports from America to the Netherlands amounted in 1905 to $73,000,000, and, America's imports from the Netherlands to practically $22,000,000. American exports to Belgium in 1905 amounted to $38,500,000, and our total imports therefrom practically $26,000,000, resulting in a total of $160,000,000 of trade with these two small countries whose combined area is less than that of the State of Ohio and whose combined population is but 12,000,000.

WOULD RIVAL ANDREE

To the north pole by balloon is M. Marcillac's plan. He will start, as Andree did, from Spitzbergen, providing himself with a wireless telegraphic apparatus whereby the balloon will be kept in permanent connection with the starting station. The balloon is to be provided with an electro-motor capable of evolving driving power for 200 hours. This motor would be used to drive the balloon in the case of light winds, or, as the aeronauts of airships generally propose to do, to deflect the balloon's path at an inclination to the wind. M. Marcillac proposes to spend only 90,000 francs on his trip. The gas for the balloon is to be supplied by a special apparatus which can be carried with the car. An instrument has been devised for investigating the air currents and another for counteracting the effect of cold in contracting the gas of the balloon.

Canada and the United States, which are in danger of losing the beauty of Niagara Falls, are not the only nations where the esthetic interest is menaced by other interests. It has been proposed to hew down thousands of trees in the Bois de Boulogne in Paris, and sell off a big slice of that great park for building sites. The Bois is a remarkable city breathing space From Central Park in New York you see the towering brick buildings that surround it. Hyde Park in London is engirdled by the crowded West End. Madrid is everywhere visible from the Prado. The Bois de Boulogne is true to its name. It is really a wood of splendid thickets, copses and groves—a deep retreat from the tumult of the city. Paris is fighting the State authorities, and when Paris gets excited and speaks with a unanimous voice, it is likely to get its way in the end.

TRANSPORTATION SYSTEMS OF THE WORLD

The development of the systems of transportation which now place the producer in the interior of one continent in direct communication with the consumer in the interior of another continent is a product of a comparatively few years. Within the lifetime of men and women now living the world had not a single mile of railway, or a single steamship crossing the ocean. To-day the world has on land 550,000 miles of railway, and on the ocean 6,000,000 tons of sail-carrying power and 18,000,000 net tons of steam-carrying power. At the beginning of the last century the sail-carrying power aggregated 4,000,000 tons; steam carrying power on the ocean did not exist, nor did railways on land exist. By the middle of the century sail-carrying power on the ocean was more than 11,000,000 tons, the steam-carrying power on the ocean was less than 1,000,000 tons, and the railways on land were but 24,000 miles. By 1880 sail power on the ocean had reached 14,500,000 tons, steam power about 6,000,000 tons, and railways on land 225,000 miles. From that time forward steam power on the ocean so rapidly took the place of the sail that in 1905 sailing vessels on the ocean aggregated but 6,000,000 tons carrying power, while steam vessels had an aggregate tonnage of 18,500,000 tons and railways an aggregate of 550,000 miles in length, of which 217,000 miles, or two-fifths of the total, are in the United States.

The United States leads the world, both in the present mileage and the recent growth of its railways, according to statistics just issued by the Department of Commerce and Labor. Of the total railway mileage of the world, aggregating 534,000 miles for 1904, 211,074 miles were in the United States, 35,323 miles in European Russia, 32,967 miles in Germany, 28,102 miles in France, 26,950 miles in India, 24,120 miles in Austria-Hungary, 22,634 miles in the United Kingdom, 19,611 miles in Canada, 15,560 miles in Africa, 14,113 miles in Australia, 11,559 miles in Argentina, 10,356 miles in Mexico, 9,961 miles in Italy, 9,368 miles in Brazil, 7,697 miles in Sweden, 7,322 miles in Siberia, Manchuria and other Asiatic possessions of Russia, 4,495 miles in Japan, and 1,176 miles in China. It was not until 1835 that the number of railways in operation in the United States first reached as much as 1,000 miles, being in that year 1,098 miles; by 1850 the total had grown to 9,021 miles; by 1860 to 30,626 miles; in 1865, 35,085 miles. In the decade from 1865 to 1875 the mileage more than doubled, the total for the last year named being 74,096; the total for 1885 was 128,320 miles, that for 1895 181,115 miles, for 1900 194,262 miles, and for 1905 217,328 miles, their aggregate cost being estimated by Poor's Manual for 1905 at the enormous sum of $11,666,000,000 out of an aggregate cost of $37,000,000,000 for the entire world.

The total net tonnage of the steam and sailing vessels of the world, including only vessels of over 100 tons each, is estimated by Lloyd's Register at about 6,000,000 tons of sail and 18,500,000 tons of steam. Of this total 24,500,000 tons, 11,000,000 tons, or nearly one-half, is credited to the United Kingdom and her colonies, 3,250,000 to the United States, 1,333,000 to Norway, 1,200,000 to France, and about 500,000 tons each to Russia, Sweden, Spain, Japan and the Netherlands, in the order named.

In sharp contrast with the rapid growth achieved by American railways is the slow development of the merchant marine of the United States. The tonnage of vessels engaged in the foreign trade of the United States was, in 1855, 2,348,358 tons; in 1875, 1,515,598 tons; in 1895, 822,347 tons, and in 1905 943,750 tons. The tonnage of vessels engaged in the coatswise trade of the United States was 2,543,255 tons in 1855, 3,219,698 tons in 1875, 3,728,714 tons in 1895 and 5,441,688 tons in 1905; while the total tonnage of the merchant marine of the United States, including all vessels whether engaged in the foreign trade, the coastwise trade, or the whale, cod and mackerel fisheries, has only grown from 5,212,001 tons in 1855 to 6,456,543 tons in 1905.

Freight rates are shown to have decreased both on land and sea. The average rate per bushel of wheat from Chicago to New York has decreased as follows: By lake and canal, from 26.6 cents in 1865 to 4.7 cents in 1905; by lake and rail, from 29 cents in 1868, the earliest available date, to 5 cents in 1905; by railway only, from 46 cents in 1866 to 11 cents in 1905. For the same commodity the rate between New York and Liverpool, while subject to wide fluctuations, has shown a general decline, especially in more recent years. In 1873 the rate per bushel of wheat from New York to Liverpool was 10 9-16 cents; in 1875, 8 7-16 cents; in 1885, 3 3-6 cents; in 1895, 2 9-16 cents; and in 1905, 1 1-8 cents.

During the latest year for which statistics are available, the railways of the United States carried 718,654,951 passengers and transported 1,300,000,000 tons of freight, against 351,427,688 passengers carried and 437,000,000 tons of freight transported in 1885.

The close connection between adequate transportation facilities and commerce is illustrated by the fact that in 1800, when there were no railroads or steamships and but 4,000,000 tons of sail carrying power on sea, the world's commerce was valued at $1,500,000,000, while at the present time, aided by nearly 550,000 miles of railway and the ocean steam and sail tonnage above described, its international commerce at this time approximates $22,500,000,000. Thus, under the newly created transportation systems of the last century, which have developed the interior of continents and made merchantable many commodities which formerly would not bear the cost of transportation, the international commerce of the world is to-day about fifteen times as much as at the beginning of last century, while the world's population is but two and one-half times as much as at that time, the commerce of the world's population, as a whole, having thus grown from less than $2.50 per capita in 1800, to nearly $14 per capita at the present time.—*Hay Trade Journal.*

EDUCATIONAL AWAKENING OF CHINA

Dr. W. A. P. Martin, who has been identified with China since 1850, and whose least statement about that country is authoritative, gives some interesting and important facts in the *World's Work* with reference to how the sleeping Chinese giant is awakening. Referring to the work of Chang, the Viceroy of Central China, Dr. Martin says

"The banks of the river in front of his capital, Wuchang, are lined for miles with cotton mills, hempworks, silk filatures, glassworks, iron foundries, and powder mills, whose high chimneys proclaim the coming war. When China can supply her own markets, foreign steamers will cease to ascend the Yang-tse-Kiang."

In view of the fact that China's educational system was established more than twenty-five hundred years before Christ, and that up to only a few months ago the official examinations were restricted exclusively to subjects relating to China's literature and history, what Dr. Martin tells us of the rapid growth of school houses is surprising and significant:

"Going within the walls, we were struck by the great number of fine school houses in foreign style that rise above the huts of the natives. Our clever viceroy knows that the industrial arts have their root in science, and that science must be taught in schools. He thus proclaims from the housetops his gospel of the new education. He has embodied it in a book of rhymes, which are sung by his soldiers to the beat of the drum, and committed to memory by all the school children in a population of fifty millions. The following are some of his sounding periods:

"'We pride ourselves on our antiquity,
"'But foreign nations ridicule our weakness.
"'Knowledge is power.
"'What but their newly acquired knowledge
"'Enabled the Japanese to gain the victory over us
"'And win for themselves a place
"'Among the great powers of the earth?
"'Over against their three small islands
"'Have we not a vast territory with four hundred millions?
"'If we of the yellow race learn to stand together
"'Where is the nation that will dare to molest us?'

"The Empress Dowager and all her grandees have become converts to Chang's new gospel. Not merely has she re-enacted the Emperor's ordinance for the establishment of graded schools in all the provinces—ousting the idols and using their temples for want of houses—she has cut down the annual expenses of her theatrical troupe to one-third and devoted the other two-thirds to the erection of school houses."

Teachers for these Chinese schools are being largely provided by the Normal Colleges in Japan, which contain over four thousand Chinese students, including both sexes. Such, at least, is the claim of another writer upon the Chinese awakening: this time a Japanese, Adachi Kinnosuki.

PUGET SOUND COMMERCE IN 1905

The first year of the big ships "Minnesota" and "Dakota" in the Puget Sound commerce with the Orient yields a record growth without parallel perhaps in the history of foreign trade. Puget Sound imports and exports in 1905 were $66,539,144 against $35,385,748 in 1904—an increase of $33,129,971, or nearly 90 per cent.

Exports alone in 1905 were $55,892,296 against $26,777,263 in 1905—a net gain of $29,115,033 or 108 per cent.

Fifteen ports on the sound shared in the commerce, the principal being Seattle, whose combined imports and exports were 50 per cent. of the total, being $33,129,971, a gain of $22,933,831, or 224 per cent. in one year.

Among the countries with which Puget Sound trade was conducted, Japan led, with $25,731,836, or 38 per cent. of the total, and the Chinese Empire second, $19,175,144 or 27 per cent.

With both of these countries, the Puget Sound business was largely export. To Japan the exports were $21,767,160; as compared with $3,964,622 of imports. To China the exports were $18,853,929, as against less than $1,000,000 of imports. British Columbia and Hong Kong were the next largest traders with Puget Sound.

The leading articles of Puget Sound exports were: Cotton cloth, which amounted to $13,864,757, as compared with $1,894,685 in 1904; raw cotton, $8,116,377, against $2,158,619 the year before; wheat flour, $7,119,798; iron and steel, $6165,265; copper manufactures, $4,712,419; wheat, $3,430,012; lumber, $2,410,031; meat products, $1,070,420; barley, salmon, leather, paper, eggs and dairy products, live stock, oats, fruit, hay and feed.

The leading imports were silk, copper, hemp, tea, bags and burlap, matting, cement, fish, rice and tin. Silk, copper, hemp and tea constituted two-thirds of the important total.

What the big ships have done for the Northwest in one year—increased the exports by nearly $30,000,000, or 108 per cent.; what they have done for Seattle—increased its total trade volume by $22,000,000, or 224 per cent., no one, even the most enthusiastic of the champions of Pacific trade, would have predicted one year ago. This is certainly a most significant triumph of the cause of Puget Sound and the Northwest in the development of commerce with the Orient.

AMERICA'S PROGRESS

No topic of national importance has attracted greater attention during the last few years than the concentration of national power in America. The showing makes the growth of all other nations seem weak and trivial by comparison, and were the figures not attested by unimpeachable authority would challenge credence. Charles A. Conant, treasurer of the Morton Trust Co., gives in the *International Quarterly* a vivid picture of the rapid strides in the nation's development:

"To many people who have not followed the rapid development of the United States, the figures of the immense interests under community of control are almost staggering. These are only typical, however, of the growth of the country. If deposits of national banks in New York have swelled from $310,000,000 in 1890 to $970,000,000 in 1905, and deposits of the national banks of the country as a whole from $1,950,000,000 in 1890 to $5,000,000,000 in 1905, the facts are only a part of the story of the progress of the country.

"The number of national banks has grown in this period from 3,484 to 5,331. Deposits in savings banks have swelled from $1,550,023,956 to $2,918,775,329, and the number of depositors from 4,258,893 to 7,305,443—an increase of seventy per cent. The product of manufacturing establishments increased from $9,372,437,283 in 1890 to $13,039,279,566 in 1900. The miles of railway operated increased from 166,703 to 207,604; the passengers carried increased from 520,439,082 to 696,908,904, or about thirty per cent. The number of tons of freight carried one mile increased from 79,192,985,125 to 171,290,310,685, or more than one hundred per cent.

A NOVEL RAILWAY CAR

Perhaps the strangest looking railway car in the world is the new gasoline motor which the Union Pacific Railway has recently completed at its shops in Omaha. The design of the car body is similar to the hull of a racing yacht, and as it tears across the prairies it somewhat resembles an overturned craft driving before a gale with its keel in the air. The front end of the car is tapered off to a point. The roof is rounded off from the top and presents no flat surface to the atmosphere. The rear of the car is also rounded off, thus avoiding the vacuum produced by square end cars. In this way the wind resistance is reduced to a minimum, an important factor in transportation on the plains, where trains frequently have to buck severe head winds.

The car is designed to enter local traffic service west of Omaha. The numerous tests which have been made in the last few weeks have demonstrated its entire practicability. A number of similar cars will be built this winter and by the spring the Union Pacific will be in position practically to do away with its local trains. By using these single motor cars, or motor cars with a trailer attached, the railroad company will be able to give more frequent service at a decidedly higher rate of speed than has yet been attained with local trains in the West.

MEMPHIS, TENN.
The great railroad and water transportation center of the Mid-Mississippi Valley Region.

THE CHANGES IN TRADE ROUTES

To changes in trade routes are to be attributed the upbuilding of more cities than were ever created by any other power, or destroyed by war or by earthquakes.

The reason for the existence of a great center of trade and industry is that there is center of trade and industry is that there are to be found the conditions most advantageous for such purposes, and to such places great populations were gathered because there they were able to secure whatever in the way of employmnt and compensation was necessary for their subsistence.

In the earliest times, when there were few peoples that attempted to navigate the seas in ships, then confined their voyages to coasting along the shores, seldom venturing out of sight of land. The consequence was that commerce was carried overland by caravans, and it was in this way that all the trade between Asia and Europe was conducted.

The routes of commerce lay through Babylon, Damascus and other cities of Western Asia until the shores of the Mediterranean were reached. Crossings were made at Constantinople, Tyre, Antioch and other coast cities, all of which became great marts of commerce, and although they were repeatedly visited by earthquakes, they never lost their importance until trade routes were changed, There was no ancient city that was the scene of more wasting and destructive wars than was Babylon, but it maintained its proud pre-eminence among the cities of the Orient just as long as the innumerable caravans of the merchants of Asia passed through it and made it one of their greatest seats of commerce.

Babylon fell into decay from the moment that ships from India and China found their way through the Red Sea and transferred the trade routes from the cities of Asia Minor to those of Egypt, so that Alexandria became the greatest mart of commerce on the waters of the Mediterranean. Its ships traded with the European ports all the way from Constantinople to Gibraltar, and its commercial greatness increased, when, a thousand years after the commencement of the Christian Era, Venice sprang into extreme commercial importance, and maintained its supremacy as a mart of trade until the discovery of America, in 1492, and the almost simultaneous voyage to India around the southernmost Cape of Africa, by the Portuguese Vasco da Gama.

After that Venice went into a rapid decline Alexandria became a port of small importance, while the great commercial cities of Europe were found upon the Atlantic coasts nearer to the rich Hemisphere of the Americas and most convenient to the ships plying between India and Europe.

Thus it is seen that changes in the routes of commerce have been more powerful to destroy cities than war and earthquakes, and while it has cast down in one place, it has always upbuilded in another.—*New Orleans Picayune.*

An odd advertisement appears in a German newspaper, in which a tempting offer is made in these words: "Anybody who can prove that my tapioca is damaging to health will at once receive three packets gratis."

EXPORT IMPLEMENT AGE

POUR LA CIRCULATION À L'ÉTRANGER EXCLUSIVEMENT.

Journal indépendant exclusivement consacré aux intérêts du commerce d'exportation des machines agricoles, pompes, moulins à vent, outils de fermes, fournitures pour crèmeries et articles spéciaux de quincaillerie.

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Prière de nous adresser une traite sur New York ou un mandat-poste international.

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PUBLISHERS
1010 Arch Street, Philadelphia, Pa., U. S. A.

La même maison publie : "The Implement Age" et le "American Fertilizer"

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Dans le Répertoire d'adresses à l'usage des acheteurs, dans la première partie de ce livre nous donnons les renseignements en français; nous avons recours à ce moyen afin de faciliter la correspondance avec les maisons qui font insérer des annonces dans ce journal.

Les produits Freeman

Le catalogue No. 34, publié par S. Freeman & Sons Manufacturing Company, de Racine, Wis. (Etats-Unis d'Amérique) devrait être dans les mains de tous ceux de nos lecteurs qui s'intéressent aux moulins à vent, pylônes, coupe-ensilage, hache-racines, broyeurs de fourrage, manéges, scies mécaniques, égreneuses de maïs, moulins à moudre les grains, à vanner, semoirs à la volée, etc. Le catalogue mentionne tous les produits Freeman, et ces produits n'ont pas besoin d'autre recommendation que leur qualité supérieure; qu'on les compare aux autres produits similaires, d'où qu'ils proviennent! La compagnie donne une attention toute spéciale aux commandes de l'étranger. Elle se fera un plaisir d'envoyer son catalogue à tous ceux de nos lecteurs qui voudront bien le lui demander.

Presses à foin

La presse à foin David Bradley, construite par la David Bradley Manufacturing Company de Bradley, Ill. (Etats-Unis d'Amérique) est connue dans tous les pays où le foin est traité selon les procédés modernes. C'est une machine qui réunit une très grande rigidité à une construction simple et à une manœuvre aisée On voit un dessin de cette presse dans l'annonce de la compagnie au recto de la couverture de ce journal. Pour plus amples renseignements, prix, etc., nos lecteurs sont priés de s'adresser directement à la compagnie.

L'évolution dans les machines agricoles

L'évolution—ou plutôt la révolution—dans les machines agricoles s'est produite tout entière dans le cours du siècle dernier. Ily a cent ans les outils agricoles étaient presque aussi primitifs qu'ils l'étaient il y a mille ans. La faux, par exemple, n'a guère plus d'un siècle et la charrue en fonte est même plus jeune. Maintenant nous avons des charrues à vapeur, des moissonneuses-batteuses mixtes et des autofaucheuses, et bien que ces machines soient communément employées dans les vastes fermes de l'ouest, où se récolte la plus ggrande partie de notre grain, leur emploi est si récent qu'une faible partie seulement de la population les vues à l'œuvre. Et pourtant elles modifient notre vie dans toutes ses phases: elles délivrent l'agriculteur de la monotonie du travail manuel, elles nous placent au premier rang parmi les exportateurs, plus que cela, elles changent l'immortelle conception de l'agriculture et les associations pastorales et idylliques qui l'ont entourée depuis l'époque d'Abraham. Dans aucune autre branche de l'invention, les progrès été plus sensibles ni plus rapides. Parmi les machines exposées à Saint-Louis, rien n'était peut-être plus frappant que la charrue de bois employée par. Daniel Webster dans la ferme de son père à côté d'une charrue à vapeur moderne, à 8 socs.

Aujourd'hui tout se sème à la machine, et tout, à l'exception peut-être du coton, se récolte à la machine. Le laboureur n'a plus à trimer, tout le long de la journée, d'un bout à "autre de son champ. Il laboure assis sur une charrue à roues et à siège élastique. Il y a des charrues spéciales pour toutes sortes d'usages: des charrues pour le labourage des pelouses, des champs en éteule, des charrues pour travaux lourds ou légers, des charrues polysocs creusant trois sillons à la fois. Le labourage à la vapeur est chose commune dans les grandes fermes à blé de la côte du Pacifique. Dans les terres de la Californie, une locomotive de soixante chevaux-vapeur, traînant des charrues à disques d'une largeur de 21 pieds labourera le sol à une profondeur de dix pouces et à raison de soixante acres par jour. Avec des charrues à versoir construites spécialement pour ce genre de travail, on peut labourer, d'un seul coup, une largeur de vingt-huit pieds. En d'autres termes, cela veut dire qu'un homme avec deux chevaux et une seule charrue à versoir, devrait traverser un champ vingt-huit foispour faire le même travail que fait une locomotive en passant une seule fois avec son groupe de charrues. Un fermier du centre ouest, qui se sert d'une petite locomotive pour tirer une charrue multiple comprenant quatre socs de quatarze pouces chacun, dit que son laubourage lui coûte de 50 à 52 cents par acre. Il trouve la vapeur économique.

Le labourage étant fait, le distributeur de fermier remplace la fourche à main—et le mal de reins qu'elle engendrait. Pendant que le fermier promène sans fatigue ses deux chevaux dans son champ, l'engrais est mécaniquement et uniformément distribué sur le sol de l'arrière de sa charrette. Par ce procédé on économise de l'engrais, parce que celui-ci est répandu plus uniformément qu'on ne saurait le faire à la main, et il va sans dire qu'il y a de plus une grande économie de penible labeur.

Quand la terre est labourée, prête à recevoir les graines, les machines prennent de nouveau la place du muscle. Le semeur va toujours faire les semailles, mais plus de la même façon qu'autrefois. Il ne laisse plus tomber les graines dans le sol comme jadis, il ne connait plus ces marches pénibles de l'aube au crépuscule dans les terres fraichement labourées. Le grain est jeté à la volée et recouvert par des machines qui, en même temps, indiquent la superficie ensemencée. Le maïs es déposé dans le sol de la même façon, recouvert dans un sillon, ou dans de petits monticules également distancés; on sème à la machine les pommes de terre; les choux eux-mêmes, les choux-fleurs, les plants de tabac sont mis en terre au moyen de machines spéciales.

Quand les graines sont une fois en terre, les mauvaises herbes ne tardent pas à faire leur apparition. Autrefois cela voulait dire la houe, des ampoules aux mains, de la courbature, une lutte sans fin. Aujourd'hui, le fermier a recours à l'extirpateur et le travail est comparativement facile.

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PUGET SOUND COMMERCE IN 1905

The first year of the big ships "Minnesota" and "Dakota" in the Puget Sound commerce with the Orient yields a record growth without parallel perhaps in the history of foreign trade. Puget Sound imports and exports in 1905 were $66,539,144 against $35,385,748 in 1904—an increase of $33,129,971, or nearly 90 per cent.

Exports alone in 1905 were $55,892,266 against $26,777,263 in 1905—a net gain of $29,115,033 or 108 per cent.

Fifteen ports on the sound shared in the commerce, the principal being Seattle, whose combined imports and exports were 50 per cent. of the total, being $33,129,971, a gain of $22,033,831, or 224 per cent. in one year.

Among the countries with which Puget Sound trade was conducted, Japan led, with $25,731,836, or 38 per cent. of the total, and the Chinese Empire second, $19,175,144 or 27 per cent.

With both of these countries, the Puget Sound business was largely export. To Japan the exports were $21,767,160; as compared with $3,964,622 of imports. To China the exports were $18,853,029, as against less than $1,000,000 of imports. British Columbia and Hong Kong were the next largest traders with Puget Sound.

The leading articles of Puget Sound exports were: Cotton cloth, which amounted to $13,864,757, as compared with $1,894,685 in 1904; raw cotton, $8,116,377, against $2,158,619 the year before; wheat flour, $7,119,798; iron and steel, $6165,205; copper manufactures, $4,712,419; wheat, $3,439,012; lumber, $2,410,031; meat products, $1,070,420; barley, salmon, leather, paper, eggs and dairy products, live stock, oats, fruit, hay and feed.

The leading imports were silk, copper, hemp, tea, bags and burlap, matting, cement, fish, rice and tin. Silk, copper, hemp and tea constituted two-thirds of the important total.

What the big ships have done for the Northwest in one year—increased the exports by nearly $30,000,000, or 108 per cent.; what they have done for Seattle—increased its total trade volume by $22,000,000, or 224 per cent., no one, even the most enthusiastic of the champions of Pacific trade, would have predicted one year ago. This is certainly a most significant triumph of the cause of Puget Sound and the Northwest in the development of commerce with the Orient.

AMERICA'S PROGRESS

No topic of national importance has attracted greater attention during the last few years than the concentration of national power in America. The showing makes the growth of all other nations seem weak and trivial by comparison, and were the figures not attested by unimpeachable authority would challenge credence. Charles A. Conant, treasurer of the Morton Trust Co., gives in the *International Quarterly* a vivid picture of the rapid strides in the nation's development:

"To many people who have not followed the rapid development of the United States, the figures of the immense interests under community of control are almost staggering. These are only typical, however, of the growth of the country. If deposits of national banks in New York have swelled from $310,000,000 in 1890 to $970,000,000 in 1905, and deposits of the national banks of the country as a whole from $1,950,000,000 in 1890 to $5,000,000,000 in 1905, the facts are only a part of the story of the progress of the country.

"The number of national banks has grown in this period from 3,484 to 5,331. Deposits in savings banks have swelled from $1,550,023,956 to $2,918,775,329, and the number of depositors from 4,258,893 to 7,305,443—an increase of seventy per cent. The product of manufacturing establishments increased from $9,372,437,283 in 1890 to $13,039,279,566 in 1900. The miles of railway operated increased from 166,703 to 207,604; the passengers carried increased from 520,439,082 to 696,008,994, or about thirty per cent. The number of tons of freight carried one mile increased from 79,192,985,125 to 171,290,310,685, or more than one hundred per cent.

A NOVEL RAILWAY CAR

Perhaps the strangest looking railway car in the world is the new gasoline motor which the Union Pacific Railway has recently completed at its shops in Omaha. The design of the car body is similar to the hull of a racing yacht, and as it tears across the prairies it somewhat resembles an overturned craft driving before a gale with its keel in the air. The front end of the car is tapered off to a point. The roof is rounded off from the top and presents no flat surface to the atmosphere. The rear of the car is also rounded off, thus avoiding the vacuum produced by square end cars. In this way the wind resistance is reduced to a minimum, an important factor in transportation on the plains, where trains frequently have to buck severe head winds.

The car is designed to enter local traffic service west of Omaha. The numerous tests which have been made in the last few weeks have demonstrated its entire practicability. A number of similar cars will be built this winter and by the spring the Union Pacific will be in position practically to do away with its local trains. By using these single motor cars, or motor cars with a trailer attached, the railroad company will be able to give more frequent service at a decidedly higher rate of speed than has yet been attained with local trains in the West.

MEMPHIS, TENN.
The great railroad and water transportation center of the Mid-Mississippi Valley Region.

THE CHANGES IN TRADE ROUTES

To changes in trade routes are to be attributed the upbuilding of more cities than were ever created by any other power, or destroyed by war or by earthquakes.

The reason for the existence of a great center of trade and industry is that there is center of trade and industry is that there are to be found the conditions most advantageous for such purposes, and to such places great populations were gathered because there they were able to secure whatever in the way of employmnt and compensation was necessary for their subsistence.

In the earliest times, when there were few peoples that attempted to navigate the seas in ships, then confined their voyages to coasting along the shores, seldom venturing out of sight of land. The consequence was that commerce was carried overland by caravans, and it was in this way that all the trade between Asia and Europe was conducted.

The routes of commerce lay through Babylon, Damascus and other cities of Western Asia until the shores of the Mediterranean were reached. Crossings were made at Constantinople, Tyre, Antioch and other coast cities, all of which became great marts of commerce, and although they were repeatedly visited by earthquakes, they never lost their importance until trade routes were changed. There was no ancient city that was the scene of more wasting and destructive wars than was Babylon, but it maintained its proud pre-eminence among the cities of the Orient just as long as the innumerable caravans of the merchants of Asia passed through it and made it one of their greatest seats of commerce.

Babylon fell into decay from the moment that ships from India and China found their way through the Red Sea and transferred the trade routes from the cities of Asia Minor to those of Egypt, so that Alexandria became the greatest mart of commerce on the waters of the Mediterranean. Its ships traded with the European ports all the way from Constantinople to Gibraltar, and its commercial greatness increased, when, a thousand years after the commencement of the Christian Era, Venice sprang into extreme commercial importance, and maintained its supremacy as a mart of trade until the discovery of America, in 1492, and the almost simultaneous voyage to India around the southernmost Cape of Africa, by the Portuguese Vasco da Gama.

After that Venice went into a rapid decline Alexandria became a port of small importance, while the great commercial cities of Europe were found upon the Atlantic coasts nearer to the rich Hemisphere of the Americas and most convenient to the ships plying between India and Europe.

Thus it is seen that changes in the routes of commerce have been more powerful to destroy cities than war and earthquakes, and while it has cast down in one place, it has always upbuilded in another.—*New Orleans Picayune*

An old advertisement appears in a German newspaper, in which a tempting offer is made in these words: "Anybody who can prove that my tapioca is damaging to health will at once receive three packets gratis."

INTENTIONAL SECOND EXPOSURE

EXPORT IMPLEMENT AGE

POUR LA CIRCULATION À L'ÉTRANGER EXCLUSIVEMENT.

Journal indépendant exclusivement consacré aux intérêts du commerce d'exportation des machines agricoles, pompes, moulins à vent, outils de fermes, fournitures pour crèmeries et articles spéciaux de quincaillerie.

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PUBLISHERS
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La même maison publie : "The Implement Age" et le "American Fertilizer"

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Vol. XIII. Philadelphie, Etats-Unis, Marzo, 1906. No. 5

Dans le Répertoire d'adresses à l'usage des acheteurs, dans la première partie de ce livre nous donnons les renseignements en français; nous avons recours à ce moyen afin de faciliter la correspondance avec les maisons qui font insérer des annonces dans ce journal.

Les produits Freeman

Le catalogue No. 34, publié par S. Freeman & Sons Manufacturing Company, de Racine, Wis. (États-Unis d'Amérique) devrait être dans les mains de tous ceux de nos lecteurs qui s'intéressent aux moulins à vent, pylônes, coupe-ensilage, hache-racines, broyeurs de fourrage, manéges, scies mécaniques, égreneuses de maïs, moulins à moudre les grains, à vanner, semoirs à la volée, etc. Le catalogue mentionne tous les produits Freeman, et ces produits n'ont pas besoin d'autre recommendation que leur qualité supérieure; qu'on les compare aux autres produits similaires, d'où qu'ils proviennent! La compagnie donne une attention toute spéciale aux commandes de l'étranger. Elle se fera un plaisir d'envoyer son catalogue à tous ceux de nos lecteurs qui voudront bien le lui demander.

Presses à foin

La presse à foin David Bradley, construite par la David Bradley Manufacturing Company de Bradley, Ill. (Etats-Unis d'Amérique) est connue dans tous les pays où le foin est traité selon les procédés modernes. C'est une machine qui réunit une très grande rigidité à une construction simple et à une manœuvre aisée On voit un dessin de cette presse dans l'annonce de la compagnie au recto de la couverture de ce journal. Pour plus amples renseignements, prix, etc., nos lecteurs sont priés de s'adresser directement à la compagnie.

L'évolution dans les machines agricoles

L'évolution—ou plutôt la révolution—dans les machines agricoles s'est produite tout entière dans le cours du siècle dernier. Il y a cent ans les outils agricoles étaient presque aussi primitifs qu'ils l'étaient il y a mille ans. La faux, par exemple, n'a guère plus d'un siècle et la charrue en fonte est même plus jeune. Maintenant nous avons des charrues à vapeur, des moissonneuses-batteuses mixtes et des autofaucheuses, et bien que ces machines soient communément employées dans les vastes fermes de l'ouest, où se récolte la plus ggrande partie de notre grain, leur emploi est si récent qu'une faible partie seulement de la population les vues à l'œuvre. Et pourtant elles modifient notre vie dans toutes ses phases: elles délivrent l'agriculteur de la monotonie du travail manuel, elles nous placent au premier rang parmi les exportateurs, plus que cela, elles changent l'immortelle conception de l'agriculture et les associations pastorales et idylliques qui l'ont entourée depuis l'époque d'Abraham. Dans aucune autre branche de l'invention, les progrés été plus sensibles ni plus rapides. Parmi les machines exposées à Saint-Louis, rien n'était peut-être plus frappant que la charrue de bois employée par. Daniel Webster dans la ferme de son père à côté d'une charrue à vapeur moderne, à 8 socs.

Aujourd'hui tout se sème à la machine, et tout, à l'exception peut-être du coton, se récolte à la machine. Le laboureur n'a plus à trimer, tout le long de la journée, d'un bout à l'autre de son champ. Il laboure assis sur une charrue à roues et à siège élastique. Il y a des charrues spéciales pour toutes sortes d'usages: des charrues pour le labourage des pelouses, des champs en éteule, des charrues pour travaux lourds ou légers, des charrues polysocs creusant trois sillons à la fois. Le labourage à la vapeur est chose commune dans les grandes fermes à blé de la côte du Pacifique. Dans les terres de la Californie, une locomotive de soixante chevaux-vapeur, traînant des charrues à disques d'une largeur de 21 pieds labourera le sol à une profondeur de dix pouces et à raison de soixante acres par jour. Avec des charrues à versoir construites spécialement pour ce genre de travail, on peut labourer, d'un seul coup, une largeur de vingt-huit pieds. En d'autres termes, cela veut dire qu'un homme avec deux chevaux et une seule charrue à versoir, devrait traverser un champ vingt-huit foispour faire le même travail que fait une locomotive en passant une seule fois avec son groupe de charrues. Un fermier du centre ouest, qui se sert d'une petite locomotive pour tirer une charrue multiple comprenant quatre socs de quatarze pouces chacun, dit que son labourage lui coûte de 50 à 52 cents par acre. Il trouve la vapeur économique.

Le labourage étant fait, le distributeur de fermier remplace la fourche à main—et le mal de reins qu'elle engendrait. Pendant que le fermier promène sans fatigue ses deux chevaux dans son champ, l'engrais est mécaniquement et uniformément distribué sur le sol de l'arrière de sa charrette. Par ce procédé on économise de l'engrais, parce que celui-ci est répandu plus uniformément qu'on ne saurait le faire à la main, et il va sans dire qu'il y a de plus une grande économie de penible labeur.

Quand la terre est labourée, prête à recevoir les graines, les machines prennent de nouveau la place du muscle. Le semeur va toujours faire les semailles, mais plus de la même façon qu'autrefois. Il ne laisse plus tomber les graines dans le sol comme jadis, il ne connait plus ces marches pénibles de l'aube au crépuscule dans les terres fraîchement labourées. Le grain est jeté à la volée et recouvert par des machines qui, en même temps, indiquent la superficie ensemencée. Le maïs es déposé dans le sol de la même façon, recouvert dans un sillon, ou dans de petits monticules également distancés; on sème à la machine les pommes de terre; les choux eux-mêmes, les choux-fleurs, les plants de tabac sont mis en terre au moyen de machines spéciales.

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Mais c'est quand nous en venons à la moisson que nous rencontrons les plus grandes merveilles de la mécanique agricole. Tirée par des chevaux, la moissonneuse-lieuse automatique abat dans le champ de blé mûr un andain de huit pieds de large, qu'en même temps elle ramasse et lie en gerbes, automatiquement; ou si l'on préfère la décapiteuse, les épis sont proprement coupés et, par un descenseur, tombent en un risseau continu dans la charrette qui marche à côté de la décapiteuse. Mais le spectacle le plus extraordinaire est sans doute celui qu'offre la moissonneuse combinée avec

la machine à battre. Cette moissonneuse-batteuse est employée dans les vastes océans de blé de la Californie. D'un horizon à l'autre s'étendent les champs de blé mûr. Où sont les moissonneurs qui vont mettre en grange ces moissons colonales? Si l'on employait les procédés des petites fermes, le problème de la moisson serait impossible à résoudre. Autant vider les Grands lacs avec une cuiller. Mais la moissonneuse à vapeur s'avance dans le vaste champ. Le grain tombe en un large andain, d'un côté de la machine, à l'approche de la quelle il semble fondre. De l'autre côté, avec la même régularité, tombent les sacs de blé, prêts à se rendre chez le meunier. Le fermier qui suit avec sa charrette et ses chevaux ramasse un sac de ble battu, vanné, au même endroit où cinq minutes aupararant les tiges de blé se dressaient en plein soleil.

C'est dans les plaines unies que la moissonneuse-batteuse fait surtout merveille; mais on a construit des machines spéciales pour les regions accidentées; elles fonctionnent fort bien sur les flancs des collines, et peuvent passer partout où la charrue multiple peut passer. Le plus souvent on fait usage de chevaux ou de mulets au lieu de la vapeur, et pour mettre la machine en marche il faut une trentaine de ces animaux. Une machine de ce genre avec une décapiteuse de vingt-deux pieds, peut couper, battre et mettre en sacs quarante acres de blé par jour. Elle ne demande que quatre hommes; un conducteur, un homme pour le mécanisme à décapiter, un autre pour le mécanisme à vanner et un autre pour coudre les sacs. Le coupage et le battage reviennent habituellement à 1 dollar 25 cents par acre.

La plus grande moissonneuse mixte du monde entier fonctionne depuis quelques années en Californie. Elle comprend une locomotive capable de tirer 75 tonnes et qui tient lieu de 60 chevaux; une faucheuse qui coupe un andain de 36 pieds et une machine à battre complète. Les roues directrices du monstre ont huit pieds de diamètre et des bandages de 48 pouces de large. Ces bandages portent des côtes anti-dérapantes de'un pouce et demi de haut. Elle avance à une vitesse moyenne de trois milles et demi par heure dans de bon grain; sa batteuse peut battre le grain de 100 acres en un jour. Elle emploie huit hommes. Cette colossale machine fonctionne également bien en plaine et dans les terres accidentées; elle possède assez de force pour avancer sans difficulté sur une pente de 20 pour cent. Elle a 66 pieds de long, 33 de large, et pèse plus de 100 tonnes. On se sert de pétrole comme combustible.

La somme de travail humain que demande aujourd'hui la production d'un boisseau, depuis la première jusqu'à la dernière opération, n'est en moyenne que de dix minutes et le coût de ce travail est de trois cents un tiers. Quand les hommes de l'heure actuelle étaient de jeunes garçons, un boisseau de blé représentait trois heures et trois minutes de travail, et le prix de revient était de 18 cents. Quelques années avant la Guerre civile, un boisseau de maïs représentait plus de quatre heures et demie de travail humain; le prix de revient s'élevait à 35 cents et une fraction; aujourd'hui, 41 minutes de travail produisent la même quantité qui ne revient à guère plus de dix cents. L'économie de force, de temps et d'argent est donc considérable.

Dans la grande zone du maïs, la moissonneuse-lieuse joue le même rôle que la faucheuse dans un pré à foin. Elle coupe le maïs, le lie en gerbes et dépose cinq de celles-ci- d'espace en d'espace, si vite qu'un homme a à peine le temps de les mettre en moyettes. Mieux que cela, il y a aujourd'hui une machine qui met le maïs en moyettes. Tout d'abord elle le coupe, en le maintenant dans sa position verticale, et au moyen d'un devidoir vertical et d'une plate-forme tournante, elle forme une moyette parfaite qui, une fois liée, est soulevée par une grue et déposée à l'endroit désiré. Un homme et deux chevaux peuvent ainsi faire le travail de deux ouvriers ou même davantage. Une machine permet aujourd'hui de détacher le maïs de sa tige et de l'éplucher du même coup. L'épluchage et le broyage sont de même depuis longtemps combinés. Le maïs sur sa tige passe de la charrette dans la machine à éplucher. Par le moyen de rouleaux coniques les épis sont arrachés de la tige et épluchés. Les tiges sont broyées et tombent avec les épluchures sur un tamis incliné qui laisse passer à travers ses mailles les grains de maïs qui ont pu être égrenés. Le fourrage passe sur un vay un courant d'air le chasse par un tuyau et le dépose finalement en un monceau. La machine fournit trente boisseaux de maïs épluché par heure. Il y a non seulement économie de temps et de main œuvre à employer cet appareil, mais le produit acquiert une valeur nouvelle comme aliment. C'est au broyeur que nous la devons. Las tiges de maïs, jadis inutiles ou peu s'en faut, deviennent un fourrage fort goûté par le bétail. Avant de se rendre au moulin, le maïs passe encore par une autre machine: l'égreneuse. L'égreneuse à vapeur égrène un boisseau de maïs à la minute, tandis que par l'ancien procédé il fallait cent fois autant de temps a un homme pour égrener la même quantité. On a calculé qu'il faudrait la population entière des Etats-Unis, travaillant pendant 100 jours, pour égrener par l'ancien procédé la recolte de maïs annuelle de ce pays.

Un progrès presque égal a été réalisé dans les écaleuses de trèfle, les vanneuses de haricots, etc. Tout le monde connait la faucheuse, la faneuse et le râteau à fois employés pour la récolte du foin. A ces machines sont venues s'en ajouter d'autres; la ramasseuse ameulonneuse de foin tirée par des chavaux, et une presse actionnée également par la force du cheval. La récolte et la mise en balles d'une tonne de foin à la main exigeait trente-cinq heures; et demie de travail; grâce aux machines modernes, le même travail peut se faire en onze heures et demie. L'économie la plus grande a été réalisée dans le coupage et le séchage qui, faits à la main, demandent onze heures, et à la machine, une heure trente neuf minutes.

Les machines jouent un rôle guère moins important dans les industries secondaires de la ferme. La poule est désormais remplacée par la couveuse artificielle. L'écrémeuse a pris la place des vases à crême; le moulin à vent pompe l'eau pour l'abreuvage des vaches; le balai, et le seau de solution sont avantageusement remplacés par des pulvérisateurs trainés par de chevaux, lesquels de chargent désormais de distribuer la bouillie fatale à l'insecte qui se nourrit de la feuille de la pomme de terre. Une tondeuse mécanique a été employée avec succès dans les grandes fermes de moutons de l'ouest. La vache elle-même ne saurait y échapper: il y a des machines à traire.

Dans les travaux accessoires de la ferme, les machines jouent encore un rôle important. Le moteur à gazoline fournit l'énergie sous la forme la plus commode. Il supplante dans bien des cas le travail manuel. Il broie les os pour la volaille, divers aliments pour le bétail. Il scie la provision de bois annuelle. On l'a employé dernièrement à actionner les faucheuses. Au moyen d'une petite roue directrice, on fait passer la machine à côté de l'herbe à couper, et son travail est très effectif. Les auto-faucheuses sont fréquemment employées dans les grands parcs des villes. La terre meuble de la ferme à jusqu'ici presque complètement écarte des champs les machines automobiles à cause de leur poids; mais dans les régions qui possèdent de bonnes routes, l'automobile joue déjà un rôle important pour le transport au marché des produits agricoles et surtout pour le transport des fruits.

On estime que les sommes d'argent engagées dans la manufacture de machines agricoles, dans ce pays, s'élèvent à plus de 200 millions de dollars. Au moment où la Guerre civile éclata, cette industrie ne réclamait guère plus de 3 millions cinq cent mille dollars. Le coût des matériaux employés chaque année dans la construction des machines agricoles s'élève à plus de 40 millions de dollars. La valeur des produits annuels s'élève à considérablement plus de 100 millions de dollars. Les États-Unis sont à la tête des pays en fait de machines agricoles, et l'état d'Illinois est le premier des états de l'Union américaine pour la construction des machines agricoles, surtout des machines destinées à la récolte des moissons. Chicago seul a déboursé plus de 20 pour cent du capital entier engagé dans cette industrie aux États-Unis. Chicago construit plus de machines coûteuses et compliquées, telles qui moissonneuses mixtes, moissonneuses-lieuses, faucheuses, que tout le reste du pays. Les états qui produisent les moissons les plus considérables sont souvent parmi les moindres producteurs des outils qui leur ont permis de conquérir la position éminente qu'ils occupent.

Les machines ont révolutionné l'agriculture de l'ouest d'une certaine manière et l'agriculture de l'est d'une autre manière. Les états du nord-est ont développé la culture intensive: les états du centre et du Pacifique, la culture extensive. Le New Jersey et le Connecticut, par exemple, ont plus de fermes qu'il n'en avaient il y a dix ans mais la superficie des fermes est moindre. Quoique les fermes soient plus petites qu'autrefois, la valuer de leurs produits est moitié plus grande. Les fermiers cessèrent de produire les grandes récoltes à partir du moment où les machines furent appliquées aux prairies, et s'adonnèrent à la production des légumes, tirant ainsi d'une superficie moins grande des profits beaucoup plus considérables. Dans l'ouest, au contraire, durant la même période, le nombre des fermes à la fois et leur superficie ont augmenté. Les machines ont donc produit un résultat différent dans les deux régions, et apporté à chacune des profits plus considérables.

Il n'y a qu'une génération le "schooner" des prairies s'avançait lentement à travers les plaines. Bientôt après on vit des charrues, trainées par des bœufs, défricher nochalamment le sol vierge. Puis ce fut le tour—dans l'étonnant panorama du développement occidental—de la fumée et des sifflets du chemin de fer transcontinental. Aujourd'hui la charrue à vapeur et les grandes moissonneuses- lieuses complètent la succession des scènes typiques. L'agriculture a marché d'un pas plus rapide, parmi les grandes industries, dans l'espace de la vie des hommes de l'heure présente, qu'elle n'avait fait depuis le tout commencement de l'époque pastorale. La révolution a été si soudaine qu'elle n'a pas même déplacé la main d'œuvre; les ouvriers de la ferme sont en effet moins abondants qu'autrefois. Le fermier a été délivré des corvées pénibles sans qu'aucune classe de la société n'ait eu à en souffrir.

L'agriculture americaine sait ce qu'elle doit au génie inventif, à l'esprit d'entreprise américains. C'est ce génie inventif, cet esprit d'entreprise qui ont résolu pour nous le problème de la concurrence avec les pays où la main d'œuvre est bon marché. Les étrangers reconnaissent notre supériorité et s'empressent d'acheter nos machines. La France et l'Allemagne sont nos meilleurs clients; le chiffre de leurs achats s'élève chaque année à des millions de dollars. Nos machines se recontrent dans le monde entier: dans les steppes de la Sibérie, sur le flanc des "Kopjes" de l'Afrique du Sud, sur les plateaux de l'Australie, sur les terres plates de l'Asie Mineure. Jusqu'à quel point l'usage universel des machines influencera la production et le prix des grandes récoltes, est une question qu'il appartient aux économistes de discuter. Une chose est certaine: c'est qu'une force vient d'être mise en jeu dont il est difficile de prédire toutes les conséquences. —*The Inventive Age.*

Les Perfectionnements des machines agricolas

Ce qui frappe tout d'abord dans le développement de l'agriculture en Amérique, c'est le grand nombre de perfectionnements qui ont été appartés aux procédés et aux machines agricoles. Ils ont réduit la somme de travail humain nécessaire pour produire une quantité donnée de récoltes et pour cultiver des superficies données; c'est à eux surtout que l'on doit la transformation de marchés locaux en marché du monde entier pour les céréales, le coton, les produits animaux, les produits de laiterie.

Les premiers colons de ce pays s'établirent à Jamestown (Virginie). Ils n'avaient que très peu d'outils de ferme. Ils n'avaient en réalité qu'une houe, une hache et une pioche, et avec cet outillage sommaire ils nettoyèrent la terre et firent pousser leurs premières récoltes.

Quand on fait l'étude des machines agricoles, l'outil le plus important que l'on rencontre et qui a été le plus méticuleusement étudié, qui a été soumis aux essais les plus nombreux, c'est la charrue. En 1637 il n'y avait que 37 charrues dans la colonie de la baie de Massachusets, et pendant douze années après le debarquement des Pèlerins il n'y eut pas l'ombre d'une charrue dans les fermes; le sol était remué avec des houes grossières et des pioches. Après l'apparition des charrues, la personne qui en possédait une faisait tout le labourage de la communauté; il en fut ainsi pendant des années, et les "villes," comme on appelait ces communautés, se chargeaient de l'entretien de ces charrues et versaient certaines sommes aux personnes qui les possédaient.

Ces anciennes charrues étaient assurément pittoresques, à en juger par les descriptions qu'on a d'elles et du travail qu'elles faisaient. Ce qui portait le nom de "charrue de l'ancienne colonie" avait 10 pieds de long; cela possédait une muraille de 4 pieds, et les sillons que la dite charrue laissait derrière elle ressortaient comme les côtes d'un cheval maigre. Il fallait de huit à dix bœufs pour la tirer, un homme pour monter sur l'age, un autre pour suivre par derrière avec une houe et bêcher les endroits qu'elle avait oubliés.

Le premier brevet qui ait été pris fut un brevet pour une charrue en fonte. Dans cette charrue le versoir, le soc et la muraille étaient venus d'une seule pièce; mais l'instrument fut mal reçu: les fermiers n'en voulurent pas parce que, disaient-ils, il empoisonnait le sol et faisait pousser les mauvaises herbes.

Thomas Jefferson écrivit, en 1798, un traité sur la charrue, dans lequel il donnait les résultats de l'étude attentive qu'il avait faite de la courbure du versoir de manière à diminuer le frottement et à obtenir cependant un bon sillon, et l'on dit qu'il fallut quarante-cinq années d'observation de la part des fermiers, quarante-cinq années aux inventeurs pour déterminer la forme qui convenait le mieux à une charrue.

La charrue trempée en coquille Oliver, de

1870, fut l'une des premières charrues convenables qui aient été faites; elle fut suivie plus tard par les charrues à roues, les charrues multiples, les charrues et herses mixtes, les charrues pour flancs de collines, les charrues vigneronnes, les charrues à betteraves, les charrues à disques, et enfin la charrue polysocs mixte à vapeur, faisant à la fois l'office de charrue, de herse et de semoir.

Le résultat du perfectionnement de la charrue, pour ne parler que des derniers modèles, a été la réduction du prix de revient du blé de 4 cents par boisseau à 1 cent (le cent américain vaut cinq centimes). Le temps exigé du travail humain pour préparer le sol à donner un boisseau de blé, a été réduit de trente-deux minutes huit dixièmes à deux minutes deux dixièmes, et le travail animal a été reduit de cinquante-sept minutes à une minute et demie.

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Le succés des moissonneuses-lieuses automatiques dépendait du noueur. Il n'y eut jamais que deux bons noueurs de construits, l'un par Walter A. Wood et l'autre par Appleby. Ce dernier est connu sous le nom de noueur Appleby.

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La faucheuse marcha de pair avec la moissonneuse; en réalité, elles ne furent qu'une seule et même machine pendant bon nombre d'années: la machine de Hussey est le point de départ de la faucheuse.

La première faucheuse pratique fut construite par William Ketcham, et fut suivie en 1856 par une autre construite par Lewis Miller. Cette machine possédait tous les éléments qui existent dans les bonnes machines d'ajourd'hui, qui ne sont que le développement et le perfectionnement de ce type.

La moissonneuse de maïs est une autre machine qui a joué un rôle très important surtout dans la zone du maïs. Cette machine n'a pas besoin qu'on la décrive, car ses perfectionnements ont été introduits au cours de ces quelques dernières années et tout le monde les connait. L'ancien procédé qui consistait à couper le maïs avec un couteau fut remplacé par le coupoir-traineau; celui -ci fut déplacé par la moissonneuse-lieuse, et la moissonneuse est remplacée à son tour par des machines qui coupent le maïs et le mettent en moyettes.

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La herse a été considérablement perfectionnée. La première herse employée dans ce pays consistait tout bonnement en un balai trainé sur le sol. Cela fut remplacé par la herse à bâti en bois et à dents en bois; plus tard, on substitua, des dents en fer aux dents en bois et enfin apparut la herse à bâti en acier avec dents pointues en acier. Des types divers ont été développés depuis: la herse à disques, la herse égaliseuse, et diverses formes de herses pulvérisatrices.

La semaille est non seulement faite plus rapidement et plus facilement avec les semoirs perfectionnés, mais, de plus, le grain est réparti d'une manière plus régulière et déposé dans le sol à une profondeur plus uniforme.

Le battage est également plus facile aujourd'hui qu'autrefois; il est mieux fait, il demande moins de temps et moins de main d'œuvre. La première machine à battre fut brevetée par Pitt en 1855. Celle-ci fut suivie plus tard par une machine avec emmeuleur pour la paille, plus tard encore par la machine qui engrène et coupe les liens automatiquement. Cette machine bat le blé, le met en sacs, et emmeule la paille au moyen d'un courant d'air.

La liste des outils agricoles est trop longue: on ne peut détailler chaque catégorie de machines, et j'ai simplement essayé de parler des plus importantes; mais je vais donner une liste de quelques-unes des autres classes de machines.

Tous les petits outils étaient outrefois faits à la maison, la plupart étaient en bois, mais ils se font aujourd'hui dans les fabriques. Parmi les autres grands instruments qui sont communs on peut citer la planteuse et l'arracheuse de pommes de terre, le semoir de tabac, le râteau à foin, la faneuse mécanique, les chargeurs et déchargeurs, les écosseuses de maïs, les coupe-ensilage, les broyeurs, les concasseurs, les distributeurs de fumier, les différents modèles de charrettes et voitures de ferme et beaucoup, d'autres que nous ne pouvons mentionner faute de temps et d'espace.

Quant au rang qu' occupe ce pays dans la fabrication des machines agricoles, il est certain qu'il occupe le premier rang au point de vue du nombre et de la qualité.

Partout dans ce pays les machines ont supplanté dans une large mesure le travail humain, ou bien elles ont amélioré l'application du travail et augmenté les produits agricoles; le prix de revient de la production a été diminué, le revenu du fermier a été augmenté et sa vie rendue plus facile.—*George A. Crabb* dans *The Agricultural Student.*

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En el Directorio para Compradores, en la primera parte, hallarán nuestros lectores los informes en el idioma español, a fin de que puedan entablas una correspondencia más satisfactoria con nuestros anunciantes.

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La "Standard Harrow Co.," de Utica, N. Y. U. S. A., remitirá su catalogo F á cualquiera de nuestros lectores que lo solicite. En ese libro se muestra todo el surtido "Standard," el cual incluye rastros de dientes de acero de una y dos secciones, y rastros de dientes de resorte de todos estilos y tamaños, instrumentos para cultivar, cosechadoras de patatas, regadoras de patatas, etc. y será en extremo interesante para los que no lo han visto, pues el surtido "Standard" es el más favorablemente conocido en los principales paises agrícolas del mundo.

El Ramo de Negocios "Freeman"

El Catalogo No. 34 publicado por la "S. Freeman & Sons Mfg. Co.," de Racine, Wis., U. S. A., deberia estar en las manos de todos aquellos de nuestros lectores que se interesan en el negocio ó el uso de los molinos de viento, torres, cortadores de forrage y ensilaje, fuerza motriz en alto ó de alcance, habilitación para aserrar madera, desgranadoras de maiz, máquinas de soplar, máquinas de moler, sembradoras al vuelo, etc. En el catálogo se muestra todo el extenso ramo de los negocios de Freeman, cuya fama estriva en sus propios méritos, é invita á que se compare sus productos con cualesquiera otros de la misma clase fabricados en cualquier parte del mundo. La compañia atiende particularmente á los pedidos para la exportación, y tendrá gusto en enviar su catálogo á cualquiera de nuestros lectores á quienes les interese solicitarlo.

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Sprout, Waldron & Co., de Muncy, Pa., U. S. A., fabrican maquinaria para moler toda clase de granos, y publican un catálogo en que dan una completa descripción de molinos de todo género con piedra francesa para harina de maiz y pienso, y para trituración de tortas de aceite de linaza, asi como para trituradoras de mineral, separadoras magnéticas, desgranadoras de maiz, etc. Tendrán mucho gusto en remitir ese catálogo á cualquiera de nuestros lectores que lo solicite.

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Cualquiera de nuestros lectores que se interese en las guadañadoras de prado americanas, bien sea para fuerza de caballo ó de mano, y no tiene un ejemplar del último catálogo de la "Chadborn & Coldwell Mfg. Co.," de Newburg, N. Y., U. S. A., debería escribirles, pues se alegrarian de poder enviarle un ejemplar gratis. Esa compañia es manufacturera de guadañadoras para prado de todas clases y estilos, y habiéndose establecido desde 1870, hacen un provechoso comercio en casi todos los mercados del mundo. Atenderán con prontitud y satisfactoriamente á toda correspondencia en cualquier idioma.

La Maquinaria Agrícola Americana Excede à Todas

La maquinaria agrícola americana excede á todas en ligereza y fortaleza. Mientras que las máquinas fabricadas en Alemania, Francia é Inglaterra tienen una aparienlia más sólida, no hacen un trabajo más duro, ni duran más que las ligeras y elegantes máquinas americanas. Esto es porque nuestros fabricantes las refuerzan, haciéndolas más fuertes en aquellos puntos en que tienen que resistir la mayor tension, pero donde no se requiere que sean pesadas ó fuertes las partes ahorran en el material y el peso. Las máquinas ligeras al par que fuertes funcionan con mayor facilidad, requieren menos fuerza tractiva, y ahorran también considerablemente en el costo del transporte.

La maquinaria agrícola americana ha vencido hasta un alto punto la anterior preocupación contra su ligera apariencia, y ha pasado con el mejor éxito por las pruevas más duras en el campo de todos los paises del mundo.

Una Exposición que Tuvo Buen Exito

Los directores de la Exposición de Lewis y Clarke, que tuvo lugar en Portland, Oregon, tienen mil razones para enorgullecerse del buen éxito que ha coronado sus esfuerzos. Muchos críticos hubo que aseguraban que esa Exposición fracasaria pecuniariamente, y basaban sus predicciones en el hecho de estar ya ahita la gente de tantas exposiciones, y en el otro hecho de estar situada la ciudad de Portland á muchos centenares de millas de los centros de población. Pero tan siniestras profecias fueron las que fracasaron, pues esa empresa tuvo el mejor éxito bajo todos conceptos. Su mayor servicio consistió en demostrarle al mundo el asombroso progreso, el gran desarrollo y los ilimitados recursos de la vasta región del noroeste del país. Por muchos años venideros animará á ese magnifico dominio el impetu dado por esa notable Exposición.

Supremacía del "Monitor"

Es siempre un placer para nosotros llamar la atención de nuestros lectores sobre los inventos mecánicos que pueden serles útiles á los intereses agrícolas del mundo. Entre los aparatos mecánicos más importantes para sembrar con buenos resultados la semilla que han llegado á nuestro conocimiento, y que ha probado ser uno que no solamente le ahorra mucho tiempo y trabajo al hacendado, sino que hace virtualmente nacer dos granos donde sólo uno nacía antes, se halla la Sembradora de Granos de doble disco "Monitor." Esta sembradora corta y pulveriza fácilmente la tierra más dura y es la única sembradora igualmente buena en terrenos fangosos, de adobe y gredosos. Se asegura que con este mecanismo de doble disco se aumenta la producción de 4 á 7 "bushels" más por "acre" que sembrando el grano con cualquiera otro aparato. Este disco "Monitor" está protegido por doce patentes de los Estados Unidos, y es el resultado de treinta y cinco años de est udio y experimentos prácticos sobre la construcción de sembradoras. Lo fabrica la "Monitor Drill Co de Minneapolis, Minn., U. S. A.," la cual se alegrará de enviar su catálogo descriptivo y completos pormenores relativos á los méritos de este invento.

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Nosotros creemos que la fábrica más grande de todo el mundo dedicada exclusivamente á la fabricación de bombas y herramientas para heno es la de "F. E. Meyers & Bro.," Export

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Le semoir à un rang a été suivi par le semoir à deux chevaux qui sème deux rangs à la fois et qui ou laisse tomber le maïs ou prévient son passage.

La herse a été considérablement perfectionnée. La première herse employée dans ce pays consistait tout bonnement en un balai trainé sur le sol. Cela fut remplacé par la herse à bâti en bois et à dents en bois; plus tard, on substitua, des dents en fer aux dents en bois et enfin apparut la herse à bâti en acier avec dents pointues en acier. Des types divers ont été développés depuis: la herse à disques, la herse égaliseuse, et diverses formes de herses pulvérisatrices.

La semaille est non seulement faite plus rapidement et plus facilement avec les semoirs perfectionnés, mais, de plus, le grain est réparti d'une manière plus régulière et déposé dans le sol à une profondeur plus uniforme.

Le battage est également plus facile aujourd'hui qu'autrefois; il est mieux fait, il demande moins de temps et moins de main d'œuvre. La première machine à battre fut brevetée par Pitt en 1855. Celle-ci fut suivie plus tard par une machine avec emmeuleur pour la paille, plus tard encore par la machine qui engrène et coupe les liens automatiquement. Cette machine bat le blé, le met en sacs, et emmeule la paille au moyen d'un courant d'air.

La liste des outils agricoles est trop longue: oñ ne peut détailler chaque catégorie de machines, et j'ai simplement essayé de parler des plus importantes; mais je vais donner une liste de quelques-unes des autres classes de machines.

Tous les petits outils étaient outrefois faits à la maison, la plupart étaient en bois, mais ils se font aujourd'hui dans les fabriques. Parmi les autres grands instruments qui sont communs on peut citer la planteuse et l'arracheuse de pommes de terre, le semoir de tabac, le râteau à foin, la faneuse :mécanique, les chargeurs et déchargeurs, les écosseuses de maïs, les coupe-ensilage, les broyeurs, les concasseurs, les distributeurs de fumier, les différents modèles de charrettes et voitures de ferme et beaucoup, d'autres que nous ne pouvons mentionner faute de temps et d'espace.

Quant au rang qu' occupe ce pays dans la fabrication des machines agricoles, il est certain qu'il occupe le premier rang au point de vue du nombre et de la qualité.

Partout dans ce pays les machines ont supplanté dans une large mesure le travail humain, ou bien elles ont amélioré l'application du travail et augmenté les produits agricoles; le prix de revient de la production a été diminué, le revenu du fermier a été augmenté et sa vie rendue plus facile.—*George A. Crabb* dans *The Agricultural Student.*

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En el Directorio para Compradores, en la primera parte, hallarán nuestros lectores los informes en el idioma español, a fin de que puedan entablas una correspondencia más satisfactoria con nuestros anunciantes.

El Rastro "Standard

La "Standard Harrow Co.," de Utica, N. Y., U. S. A., remitirá su catalogo F á cualquiera de nuestros lectores que lo solicite. En ese libro se muestra todo el surtido "Standard," el cual incluye rastros de dientes de acero de una y dos secciones, y rastros de dientes de resorte de todos estilos y tamaños, instrumentos para cultivar, cosechadoras de patatas, regadoras de patatas, etc. y será en extremo interesante para los que no lo han visto, pues el surtido "Standard" es el más favorablemente conocido en los principales paises agricolas del mundo.

El Ramo de Negocios "Freeman"

El Catalogo No. 34 publicado por la "S. Freenman & Sons Mfg. Co.," de Racine, Wis., U. S. A., deberia estar en las manos de todos aquellos de nuestros lectores que se interesan en el negocio ó el uso de los molinos de viento, torres, cortadores de forrage y ensilaje, fuerza motriz en alto ó de alcance, habilitación para aserrar madera, desgranadoras de maiz, máquinas de soplar, máquinas de moler, sembradoras al vuelo, etc. En el catálogo se muestra todo el extenso ramo de los negocios de Freeman, cuya fama estriva en sus propios méritos, é invita á que se compare sus productos con cualesquiera otros de la misma clase fabricados en cualquier parte del mundo. La compañía atiende particularmente á los pedidos para la exportación, y tendrá gusto en enviar su catálogo á cualquiera de nuestros lectores á quienes les interese solicitarlo.

Sprout, Waldron & Co.

Sprout, Waldron & Co., de Muncy, Pa., U. S. A., fabrican maquinaria para moler toda clase de granos, y publican un catálogo en que dan una completa descripción de molinos de todo género con piedra francesa para harina de maiz y pienso, y para trituración de tortas de aceite de linaza, asi como para trituradoras de mineral, separadoras magnéticas, desgranadoras de maiz, etc. Tendrán mucho gusto en remitir ese catálogo á cualquiera de nuestros lectores que lo solicite.

Las Guadañadoras de Prado Americanas

Cualquiera de nuestros lectores que se interese en las guadañadoras de prado americanas, bien sea para fuerza de caballo ó de mano, y no tiene un ejemplar del último catálogo de la "Chadborn & Coldwell Mfg. Co.," de Newburg, N. Y., U. S. A., debería escribirles, pues se alegrarian de poder enviarle un ejemplar gratis. Esa compañía es manufacturera de guadañadoras para prado de todas clases y estilos, y habiéndose establecido desde 1870, hacen un provechoso comercio en casi todos los mercados del mundo. Atenderán con prontitud y satisfactoriamente á toda correspondencia en cualquier idioma.

La Maquinaria Agrícola Americana Excede à Todas

La maquinaria agricola americana excede á todas en ligereza y fortaleza. Mientras que las máquinas fabricadas en Alemania, Francia é Inglaterra tienen una aparienlia más sólida, no hacen un trabajo más duro, ni duran más que las ligeras y elegantes máquinas americanas. Esto es porque nuestros fabricantes las refuerzan, haciéndolas más fuertes en aquellos puntos en que tienen que resistir la mayor tension, pero donde no se requiere que sean pesadas ó fuertes las partes ahorran en el material y el peso. Las máquinas ligeras al par que fuertes funcionan con mayor facilidad, requieren menos fuerza tractiva, y ahorran también considerablemente en el costo del transporte.

La maquinaria agrícola americana ha vencido hasta un alto punto la anterior preocupación contra su ligera apariencia, y ha pasado con el mejor éxito por las pruevas más duras en el campo de todos los paises del mundo.

Una Exposición que Tuvo Buen Exito

Los directores de la Exposición de Lewis y Clarke, que tuvo lugar en Portland, Oregon, tienen mil razones para enorgullecerse del buen éxito que ha coronado sus esfuerzos. Muchos criticos hubo que aseguraban que esa Exposición fracasaria pecuniariamente, y basaban sus predicciones en el hecho de estar ya ahita la gente de tantas exposiciones, y en el otro hecho de estar situada la ciudad de Portland á muchos centenares de millas de los centros de población. Pero tan siniestras profecias fueron las que fracasaron, pues esa empresa tuvo el mejor éxito bajo todos conceptos. Su mayor servicio consistió en demostrarle al mundo el asombroso progreso, el gran desarrollo y los ilimitados recursos de la vasta región del noroeste del país. Por muchos años venideros animará á ese magnifico dominio el impetu dado por esa notable Exposición.

Supremacía del "Monitor"

Es siempre un placer para nosotros llamar la atención de nuestros lectores sobre los inventos mecánicos que pueden serles útiles á los intereses agricolas del mundo. Entre los aparatos mecánicos más importantes para sembrar con buenos resultados la semilla que han llegado á nuestro conocimiento, y que ha probado ser uno que no solamente le ahorra mucho tiempo y trabajo al hacendado, sino que hace virtualmente nacer dos granos donde sólo uno nacia antes, se halla la Sembradora de Granos de doble disco "Monitor." Esta sembradora corta y pulveriza fácilmente la tierra más dura y es la ùnica sembradora igualmente buena en terrenos fangosos, de adobe y gredosos. Se asegura que con este mecanismo de doble disco se aumenta la producción de 4 á 7 "bushels" más por "acre" que sembrando el grano con cualquiera otro aparato. Este disco "Monitor" está protegido por doce patentes de los Estados Unidos, y es el resultado de treinta y cinco años de est udio y experimentos prácticos sobre la construcción de sembradoras. Lo fabrica la "Monitor Drill Co de Minneapolis, Minn., U. S. A.," la cual se alegrará de enviar su catálogo descriptivo y completos pormenores relativos á los méritos de este invento.

Bombas y Herramientas para Heno

Nosotros creemos que la fábrica más grande de todo el mundo dedicada exclusivamente á la fabricación de bombas y herramientas para heno es la de "F. E. Meyers & Bro.," Export

INTENTIONAL SECOND EXPOSURE

Office B-17-21, Produce Exchange, New York, N. Y., U. S. A. La fábrica contiene un espacio de suelo que mide 350,000 pies cuadrados, y emplea 500 obreros exclusivamente en la fabricación de bombas y herramientas para heno. No es necesario decir que tanto la fábrica como su habilitación de máquinas, utensilios, etc., contienen todos los más modernos perfeccionamientos, y la compañía está preparada para despachar con prontitud y satisfactoriamente los pedidos. Todas las comunicaciones se deberán dirigir á su oficina de expertación, B-17-21 Produce Exchange, New York, N. Y., U. S. A.

La Evolutión de la Maquinaria Agrícola

La evolución—ó mejor dicho la revolución de la maquinaria agrícola se ha efectuado en el curso del siglo préximo pasado. Hace cien años eran los instrumentos de labranza casi tan primitivos y rudos como hace mil años. La guadaña ó segadora de mano, por ejemplo, thiene poco más de un siglo, y el arado de hierro colado se usó por primera vez más tarde. Hoy tenemos arados al vapor, cosechadoras combinadas con rastrillos, y segadoras automáticas, y aunque estas máquinas se usan comunmente en las grandes haciendas del Oeste, donde se produce la mayor parte de nuestros granos, su uso es tan reciente, que solo una pequeña parte de la población las han visto funcionar. Sin embargo, ellas están cambiando nuestra vida en todas sus fases,—librando al hacendado de la monotonía del trabajo á mano, colocándonos á la cabeza como exportadores, y lo que es más, alterando la inmortal concepción de la agricultura, y las asociaciones pastorales y bucólicas que la han rodeado desde los días de Abraham. En nigún otro ramo de inventos ha sido más notable y rápido el progreso. Una de las exhibiciones más interesantes en la Exposición de San Luis fué el arado de madera usado por Daniel Webster en la hacienda de su padre al lado de un arado al vapor moderno de ocho hileras de rejas.

Todas las grandes cosechas se plantan hoy, y todas, excepto la de algodón, se recojen con maquinaria. El labrador no tiene ya que andar despacio y fatigosamente de un lado á otro del campo. Hoy conduce un arado "Sulky" sentado en un asiento muelle. Hay arados especiales para todos los requerimientos: arados para el césped, arados para rastrojo, arados de subsuelo, arados para trabajojs duros, arados para trabajos ligeros, y arados de reja múltiple que abren tres surcos á la vez. Arar al vapor en las inmensas plantaciones de trigo de las costas del Pacifico es cosa muy común. En las tierras de California una máquina de tracción de una fuerza de sesenta caballos tira de una ringlera de veinte y un pies de arados de discos que rompen la tierra á una profundidad de diez pulgadas y á razón de sesenta acres al día. Con los arados de vertedera diseñados especialmente para este trabajo se puede arar profundamente una faja de tierra de veinte y ocho pies de anchura. Esto quiere decir, en otras palabras, que un hombre y un par de caballos con un arado de vertedera sencillo tendría que cruzar el campo veinte y ocho veces para hacer el mismo trabajo que una máquina de tracción hace en un solo viaje de sus arados. Un hacendado del Oeste Central que usa una ligera máquina de tracción con cuatro de catorce pulgadas dice que sólo le cuesta de 50 á 52 centavos por acre el arar sus tierras, y considera muy económico el uso del vapor.

Asi ara da su tierra, su esparcidor de abono reemplaza la horquilla de mano y su dolor de espalda. Mientras que el labrador con un par de caballos los lleva de aqui para alli á través del campo, el fertilizador es mecánicamente esparcido parejamente sobre la tierra desde la parte posterior del carretón. Por este método se obtiene una economía en el abono, porque se distribuye más uniformemente de lo que es posible esparciéndolo con la mano, sin atender al ahorro de trabajo.

Preparada asi la tierra para recibir la semilla, toma otra vez la maquinaria el lugar de la fuerza muscular. La sembradora va de aqui para alli sembrando la semilla, pero no como lo hacía antes, dejando caer la semilla y andando fatigosamente de arriba para abajo y vice versa desde el alba hasta el oscurecer. Hoy una máquina arroja el grano ó semilla al vuelo abre el surco y la siembra registrando al mismo tiempo el area de tierra sembrada. Del mismo modo se siembra el maiz, se plantan las patatas, y hasta las matas de col, coliflor y tabaco se plantan con aparatos mecánicos.

Poco después de plantada la cosecha aparecen las yerbas. Para extirparlas se requería antes el azadón, las manos ampolladas, espaldas adoloridas y una fatigosa lucha. Hoy el hacendado puede escoger entre una gran variedad de instrumentos mecánicos para hacer ese trabajo sin tales inconvenients.

Pero es cuando llegamos á la cosecha que encontramos las mayores maravillas de la ingeniosidad mecánica. La agavilladora automática, tirade por caballos, corta el trigo maduro en una faja de tierra de ocho pies de ancho, lo recoge, y automáticamente lo agavilla, y si se prefiere una descabezadora, corta las cabezas ó granos de trigo limpiamente y los echa en un chorro constante por una canal en el carretón que es llevado al lado de la máquina descabezadora. La escena más espectacular del progreso de la agricultura es la que presenta la máquina en que se combina la cosechadora con la trilladora, la cual se usa en las inmensas areas sembradas de granos de la California. De horizonte á horizonte se extienden esos campos ó mares de mieses maduras. ¿Dónde están las cosechadoras que recojan semejante cosecha? Medida por los métodos de las pequeñas haciendas, el problema de cosecharla se parece al de vaciar los grandes Lagos del Norte con un cucharón; pero la gran máquina de cosecharr al vapor penetra y avanza sin cesar en ese mar de mieses. El grano cae al un lado de una ancha faja de tierra, disolviéndose ante la marcha de esa máquina. Al otro lado caen con la misma regularidad saco tras saco lleno de granos y listo para el molinero. El ranchero sigue la máquina con su carretón recogiendo los sacos de trigo rastrillado y aventado, en el mismo lugar donde cinco minutos antes undeaban las mieses á la luz del sol.

La máquina combinada para cosechar y rastrillar hace su mejor trabajo en terrenos llanos; pero se han perfeccionado máquinas especiales de esta clase para trabajar en las cuestas de las tierras ondulantes, de manera que pueden seguir donde quiera que funciona el arado de reja múltiple. El algunas fincas se usan caballos ó mulas, en vez de vapor, empleándose treinta ó más de estos animales. Semejante máquina, con una descabezadora de veinte y dos pies, puede cortar, rastrillar y ensacar las mieses de cuarenta "acres" de tierra al día. Sólo cuatro hombres requiere: un arriero, un corredor de descabezadora, un asistente separador y un cosedor de sacos. El costo de cortar y rastrillar asciende ordinariamente á $1.25 por "acre."

Por varios años ha estado en operación en la cosechadora combinada más grande del

mundo. Consiste en una maquiná de tracción capaz de arrastrar 75 toneladas, que equivale á 60 caballos; una guadañadora que corta las mieses en una faja de tierra de 36 pies de ancho y una máquina de rastrillar completa. Las ruedas motrices de esa enorme máquina tienen ocho pies de diámetro y llantas de 48 pulgadas de anchura que llevan listones salientes. La rastrilladora tiene capacidad para rastrillar las mieses de 100 "acres" al día. Esa gigantesca máquina funciona igualmente bien en terrenos llanos y ondulantes, atendida por ocho hombres, y tiene suficiente potencia para acomodarse á un declive, de 20 grados sin dificultad. Tiene un largo de 66 pies, la mitad de estos de altura y pesa más de 100 toneladas. Usa aceite (petroleo) como combustible.

La cantidad de trabajo humano requerida hoy para producir un "bushel" de trigo, desde que se siembra hasta que queda listo el grano para el mercado, es solamente diez minutos y el costo de semejante trabajo tres y un tercio centavos. Cuando los que hoy viven eran niños, un "bushel" de trigo representaba un trabajo de tres horas y tres minutos, y un costo de 18 centavos. Inmediatamente antes de la Guerra Civil un "bushel" de maiz representaba más de cuatro y media horas de trabajo humano y un costo de 35 y una fracción de centavos; hoy 41 minutos de trabajo producen la misma cantidad con un costo de poco más de 10 centavos. El ahorro potencial de dinero, sin atender á la economía de tiempo y vigor, viene á ser enorme.

En la vasta región maicera, la agavilladora de maiz hace lo que la guadañadora en los campos sembrados de heno. Esa máquina corta el maiz, ata las mazorcas formando lios de tres, y los deposita en un lugar tan rápidamente como puede hacinarlos un hombre. Otro adelanto es el de la hacinadora de maiz, la cual lo corta en la mata y por medio de un carrete giratorio vertical y una mesa giratoria forma una hacina perfecta, la cual, cuando está atada, es levantada por una grua y depositada donde se necesita. Un hombre y un par de de caballos pueden asi hacer el trabajo de dos ó más campesinos. Con otro progreso de la agricultura mecánica se recoje y se descascara el meiz en una sola operación. La máquina de descascarar y de picar hace tiempo que se combinan asi. De la mata pasa el maiz á la máquina de descascarar desde el carretón. Por medio de unos rodillos cónicos se arrancan de la mata las mazorcas de maiz y luégo se descascaran. Las matas se pican, y con las cáscaras se depositan en una criba inclinada, la cual toma aquella parte del maiz que puede haberse desgranado. El pasto pasa á un aventador que lo sopla por un tubo á un troje. La máquina hace este trabajo á razón de treinta "bushels" de maiz descascarado por hora. No sólo se ahorra tiempo y trabajo con el uso de esta máquina, sino que se añade un nuevo valor al producto como alimento. Esto se lo debemos á la máquina de picar. Los tallos ó matas del maiz que antes se consideraban como casi inútiles, hoy se aprovechan como un pienso que le gusta al ganado. Y en el último paso, antes de llegarle el maiz al molinero, hallamos otra vez una máquina. Las desgranadora al vapor desgrana un "bushel" de maiz por minuto, mientras por el sistema de desgranar anterior, se necesitaba el trabajo de un hombre por un tiempo cien veces mayor. Se ha calculado que se necesitaría toda la población de los Estados Unidos trabajando 100 días para desgranar á mano la cosecha anual de maiz de este paiz.

Casi el mismo progreso se ha realizado en las mondadoras de trébol, las desenvainadoras de fréjoles, etc., y todos están familiarizados con la guadañadora, la esparcidora de heno y el rastro de caballo usado para la cosecha de heno. A estas hay que añadir la recogedora y la hacinadora de heno tiradas por caballos, y una prensa movida por caballo. Para cosechar y prensar una tonelada de heno se requerian antes treinta y cinco y media horas de trabajo, mientras que con la maquinaria moderna sólo once y media horas se requieren. **La mayor** economía se realiza al cortar y curar la cosecha, que ocupaban once horas con el trabajo á mano, mientras que con maquinaria sólo una hora y treinta y siete minutos se necesitan. Ni aun las vacas se han escapado de la maquinaria, pues ya está popularizándose el uso de máquinas de ordeñar.

Se calcula que el capital en dinero efectivo invertido en la manufactura de maquinaria agricola en este pais pasa de $200,000,000. Le máquina de gasolina suministra fuerza motriz en forma disponible, y está reemplazando el trabajo de mano de muchos modos. Ya muele los huesos para la comida de las aves de corral y el pienso para el ganado; asierra el abasto de madera ó leña anual; y últimamente se ha usado para mover las máquinas de segar. Por medio de una pequeña rueda guiadora se puede hacer andar la máquina inmediatamente fuera de la yerba y trabajar de un modo muy eficaz Las desyerbadoras automáticas se emplean en los parques de muchas grandes ciudades. El costo de los materiales consumidos anualmente en la manufactura de instrumentos y máquinas agricolas pasa de $40,000,000. Al estallar la Guerra Civil sólo requería esta industria la inversión de $3,500,000. El valor de la producción anual de esta industria fabril excede con mucho $100,000,000. Los Estados Unidos están hoy á la cabeza de todas las naciones en la producción y calidad de instrumentos y maquinaria agricolas, y especialmente en la de máquinas de cosechar. Sólo en Chicago hay invertido un 20 por ciento del capital dedicado á esta industria para los Estados Unidos. Chicago fabrica más de las máquinas complicadas y costosas, especialmente las cosechadoras combinadas, agavilladoras, etc., que todo el resto del país. Los Estados que producen las más abundantes cosechas son en muchos casos los que menos producen los instrumentos que tan grande importancia les han dado.

La maquinaria ha revolucionado la agricultura del Oeste de un modo y los Estados del Este de otro modo. Los Estados del Nordeste han desarrollado el cultivo intenso de la tierra. Los Estados de las praderas y del Pacífico el cultivo extenso; New Jersey y Connecticut, por ejemplo, tienen hoy mayor número de haciendas que hace diez años, pero con menores areas de tierra; pero aunque esas haciendas son menores de lo que fueron, el valor de sus productos es 50 por ciento mayor. Los hacendados abandonaron el cultivo de las grandes cosechas cuando se aplicó el uso de maquinaria á las praderas, y se dedicaron á la producción de hortalizas para la plaza, que les han proporcionado mayores ganancias cultivando tierras más reducidas. Por otra parte, en el gran Oeste durante el mismo periodo aumentaron tanto el número de haciendas como las treas de tierra cultivadas. La maquinaria ha producido diferentes resultados en distintas partes, y mayores ganancias para todas ellas.

No hace más que una generación que las goletas de pradera (como se llamba á los grandes "wagones" con sus cubiertas de lona blanca y tirados por parejas de caballos que conducian á los emigrados) andaban lentamente por aquellas vistísimas llanuras. La siguiente escena en la historia es la cansada tarea de romper aquel suelo virgen con arados tirados por yuntas de bueyes. Vino luégo en el maravilloso panorama del desarrollo del

Oeste, el humo y el silbido del ferro-carril transcontinental. Hoy el arado de vapor y la gran cosechadora y agavilladora de vapor completan la sucesión de típicas escenas. La agricultura ha adelantado más entre las grandes industrias durante la vida de hombres que hoy viven de lo que adelantó desde los más remotos tiempos pastorales. La revolución vino con tanta rapidez que ni siquiera ha dislocado el trabajo, aunque los trabajadores de campo son hoy menos abundantes que en tiempos pasados. El hacendado y el labrador se han librado de las faenas ingratas sin causarle perjuicio pára ninguna clase.

La agricultura americana reconoce su deuda al genio inventivo americano y al espíritu de empresa americano. Ha resuelto provechosamente el problema de la competición con países donde el trabajo manual es barato. Los extranjeros reconocen nuestra superioridad, y se están apresurando á comprar nuestras máquinas. Francia y Alemania son nuestros mejores compradores, tomándonos por valor de millones nuestros productos de esta clase todos los años. En todas partes del mundo se pueden ver nuestras máquinas: en las estepas de Siberia, sobre los "kopjes" del *Africa* del Sur, en las altiplanicies de Australia, y en las mesetas del Asia Menor. Cómo afectará el uso universal de nuestra maquinaria agrícola la producción y los precios de las grandes cosechas corrientes del mundo es una cuestión que les toca discutir á los economistas. Lo cierto es que se ha puesto en movimiento una fuerza, el resultado de la cual es imposible preveer.—*The Inventive Age.*

Los Arados é Instrumentos Agrícolas Americanos

La "Bucher & Gibbs Plow Co.," fabricantes de la Linea Imperial de Instrumentos Agrícolas, tienen un anuncio en la página interior de la cubierta de este número de nuestra revista que debe interesarles á muchísimos de nuestros lectores de los mercados extranjeros. Esa compañía es bien conocida en el comercio de exportación, y los que se interesen harían bien en comunicarse con su oficina de Exportación, B-21, Produce Exchange, New York, N. Y., U. S. A. Solicitan correspondencia en cualquier idioma, y tendrán gusto en dar todos los informes que se les pida.

Arados para la Exportación

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Oeste, el humo y el silbido del ferro-carril transcontinental. Hoy el arado de vapor y la gran cosechadora y agavilladora de vapor completan la sucesión de típicas escenas. La agricultura ha adelantado más entre las grandes industrias durante la vida de hombres que hoy viven de lo que adelantó desde los más remotos tiempos pastorales. La revolución vino con tanta rapidez que ni siquiera ha dislocado el trabajo, aunque los trabajadores de campo son hoy menos abundantes que en tiempos pasados. El hacendado y el labrador se han librado de las faenas ingratas sin causarle perjuicio pára ninguna clase.

La agricultura americana reconoce su deuda al genio inventivo americano y al espíritu de empresa americano. Ha resuelto provechosamente el problema de la competición con países donde el trabajo manual es barato. Los extranjeros reconocen nuestra superioridad, y se están apresurando á comprar nuestras máquinas. Francia y Alemania son nuestros mejores compradores, tomándonos por valor de millones nuestros productos de esta clase todos los años. En todas partes del mundo se pueden ver nuestras máquinas: en las estepas de Siberia, sobre los "kopjes" del *Africa* del Sur en las altiplanicies de Australia, y en las mesetas del Asia Menor. Como afectará el uso universal de nuestra maquinaria agrícola la producción y los precios de las grandes cosechas corrientes del mundo es una cuestión que les toca discutir á los economistas. Lo cierto es que se ha puesto en movimiento una fuerza, el resultado de la cual es imposible prever.—*The Inventive Age.*

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Chili hat während der letzten zwei Jahre jahrlich für 250.000 Dollar Waare von uns gekauft. Brazilien, das während vieler Jahre als geringer Markt nur betrachtet war, hat seine Einkäufe über die des Vorjahres verdreifacht, es kaufte für 151.715 Dollar, gegen 51.757 Dollar. Der übrige Theil Süd-Amerikas, Central-Amerika, und West-Indien bilden im

INTENTIONAL SECOND EXPOSURE

Ganzen unbefriedigende Märkte. Gleich nach dem Kriege erwies sich Britisch-Afrika ein flotter Käufer und nahm uns in 1903 für eine Million Dollar Waaren ab. Nun ist der dortige Markt überfüllt; es kaufte im letzten Jahre für nur 423.072 Dollar gegen 673.737 Dollar in 1904. Auch das australische Asien ist tüchtig während des letzten Fiskaljahres abgefallen, indem es nur für 1.159.933 Dollar kaufte, gegen 1.555.085 Dollar im Vorjahre. Argentinien, hingegen, war bahnbrechend, denn es kaufte für 5.032.853 Dollar gegen 3.996.476 Dollar im letzten Jahre und 2.821.257 Dollar in 1903. Das neue Tarif-Reglement gegen freie Importation von Theilen, das unzweifelhaft sehr missbraucht wurde, dürfte unsern Handel verringern, obgleich die grossen Einkäufe des Vorjahres überfüllte Lager und geringes Kaufen während der nächsten Zukunft bedeuten muss.

Canadas Handel, der amerikanische Geräthe im Betrage von 4.023.857 Dollar in 1903 bedurfte, fiel auf 3.362.113 Dollar voriges Jahr und auf 1.898.915 im letzten Fiskaljahre. In gewisser Hinsicht darf dieser fühlbare Abfall der Errichtung amerikanischer Geräthefabriken an der andern Seite der Grenze beigeschrien werden. Europa ist aus unerklärlichen Gründen im letzten Jahre ein sehr leichter Käufer gewesen. Grossbritanien, eines unserer beständigsten Käufer, nahm nur für 1.068.381 Dollar, gegen 1.921.179 Dollar in 1904. Die Ausfuhr nach Frankreich ging von 3.063.752 Dollar auf 2.817.998 Dollar herab und die deutsche Ausfuhr ebenfalls von 1.579.026 Dollar auf 1.246.101 Dollar. Hingegen stiegen die Ausfuhrbeträge nach Russland von 3.342.130 Dollar auf 3.812.705 Dollar; doch die Totalausfuhr nach den "übrigen Theilen Europas" fiel von 4.559.601 Dollar in 1903 auf 3.362.113 Dollar im letzten Jahre; und endlich auf 1.898.915 Dollar im gegenwärtigen Fiskaljahre, das mit dem 30. Juni, 1905 endigte. Diese Rückgänge müssen, jedoch, nicht auf etwaige Feindseligkeit gegen amerikanische Erzeugnisse oder auf verschärfte Konkurrenz gedeuten werden, sondern sind die Ursache zu überfüllter Lager und allgemeiner Flauheit in der Nachfrage.

Man erwartet ein Wiederaufleben des Handels im kommenden Jahre, besonders in Grossbritanien und Frankreich, alswann unsere wartenden und energischen Fabrikanten ihre Waaren umso ernster in den Handel auf neutralen Märkten zu bringen sich bemühen werden um einen Ausgangsmarkt, der so wesentlich für ein Fünftel ihrer Erzeugnisse zu sein scheint zu finden, gross genug um den gewünschten Betrag ausgleichen zu können.—"N. Y. Commercial."

Unser Geräthschaften Export

Seit dem Jahre 1899 als unsere Ausfuhr zum ersten Male die desselben Artikels in Grossbritanien überragte, waren die Vereinigten Staaten von Nord-Amerika ohne Unterbrechung die grössten Exporteure der Welt landwirthschaftlicher Geräthe und Maschinen. Selbst im Handel scheint es Vielen event. nicht begreiflich zu sein, welch wichtigen Theil die Ausfuhr in der erfolgreichen Hantirung dieser Fabrikationsbranche bilde oder wie wesentlich ein Exportweg füe das Gedeihen und für die Industrie als Ganzes ist. In den Censusberichten von 1900 war die Zahl aller Etablissemente die sich mit der Herstellung von landwirthschaftlichen Geräthen befassten auf 715 wiedergegeben. Dieselben beschäftigten 46.582 Arbeiter und 10.046 Buchhalter und ingagestehende Beamte. Der jährliche Totalwerth der Produktion belief sich auf 101.247.428 Dollar, gegen 81.271.651 Dollar zehn Jahre früher; 68.640.486 Dollar in 1880; 52.066.875 Dollar in 1870; 20.831.904 Dollar in 1860 und 6.842.611 Dollar in 1850.

Schnell wie dieser Wuchs auch scheinen mag, weit schneller noch entwickelte sich die Ausfuhr unseres Landes in eben diesen Industriebranchen. Sobald die Grenzen des einheimischen Marktes erreicht worden waren, fingen unsere Fabrikanten sofort mit aller Gewalt an, ausländische Gebiete zu betreten und dieselben mit wachsendem Erfolg und Energie weiter und immer weiter auszubeuten. Zwischen 1850 bis 1860 wurde die Ausfuhr landwirthschaftlicher Geräthe nicht separat klassifizirt, eine Thatsache, die an und für sich schon zu zeigen scheint, dass der ausländische Handel in dieser Linie dann zu gering war, um besonderer Aufmerksamkeit würdig zu sein. In 1870 wurde die Ausfuhr von Geräthen in der Landwirthschaft mit 1.068.476 Dollar angeführt, oder etwas über 2 Proz. In 1880 wuchs sie auf 2.245.742 Dollar, oder 3.27 Proz. Um 1890 schritt es noch weiter und erreichte die Summe von 3.859.184 Dollar, oder 4.74 Proz. Dieser kleine Prozentgewinn bekundet jedoch dass während all dieser Jahrzehnte unsere Fabrikanten kaum mehr als imstande waren den einheimischen Markt mit ihren Erzeugnissen zu versorgen und nicht viel an Ausfuhr denken konnten.

Seit 1900 aber berichten die Ausfuhrziffern eine ganz andere Fabel. Im Jahre 1900 allein betrugen die Exportartikel 16.099.149 Dollar oder 15.9 Proz. Während der folgenden zwei Jahre blieb sie aufrecht un erreichte dieselbe Ziffer oder ungefähr dieselbe. Vielleicht darf auch derselbe Prozentsatz während dieser zwei Zunahme in der Fabrikation während jener Periode stattfand. In 1903 aber stiegen die Exporte auf 21.006.622 Dollar und das darauffolgende Jahr wies einen Record von 22.749.635 Dollar auf. Für das Fiskaljahr welches letzten Juni endete, wurde die Ausfuhr eine etwas niedrigere und belief sich auf 20.721.741 Dollar. Der Durchschnitt für genannte drei Jahre darf mit Sicherheit als ungefähr 20 Proz. des Totalertrages angerechnet werden und dieses Verhältnis gielt somit als Massnahme für die Wichtigkeit des Exportmarktes den unsere Fabrikanten für ihre landwirthschaftlichen Geräthe anführen. Jeder Fabrikant weiss nur zu wohl was der Verlust von einem Fünftel seines Marktes für ihn bedeutet. Wenn die Industrie als Ganzes genommen wird, so belaufen sich die ausländischen Märkte auf ein Fünftel der Gesammtproduktion unserer landwirthschaftlichen Geräthe. Ein so grosses Verhältnis ist von ungeheuerer Wichtigkeit, und daher beeifern sich auch unsere hervorragenden Fabrikanten landwirthschaftlicher Geräthe und Maschinen ihre endlich gewonnene Stellung auf ausländischen Märkten zu behaupten und opponiren ernstlich den auswärtigen Handel der Nation durch Tarifstreit zu gefährden, weil derselbe doch vermieden werden kann.

Glücklicherweise ist der auswärtige Markt für unsere landwirthschaftlichen Geräthe—ungleich unserem Baumwollenmarkte—ein recht flotter und guter. Eine der auffallendsten Erscheinungen in den Handelsberichten (für sie seit einer Reihe von Jahren den der beobachtet und studirt) ist die ungewöhnliche Art und Weise in welcher sich ein neuer Markt entwickelt, um einem anderen Platz einzuräumen, woimmer, er aus irgend welchem Grunde in einem vielversprechenden Lande zurückgegangen ist. So ist z. B. ein Jahr lang, Russland unser bester Kunde gewesen; ein anderes, Canada, ein anderes Jahr Argentinien. Grossbritanien, Frankreich, Deutschland und Australien sind ebenfails Märkte, die jährlich gewöhnlich einen Absatz von 1.000.000 Dollar landwirthschaftlicher Geräthe aufweisen. Mexiko ist ein guter und ein ungewöhnlich ständiger Kunde von uns, der jährlich zwischen 300.000 Dollar bis 400.000 Dollar Waare abnimmt; Kuba ist ein vielversprechender Markt unter Reciprozität und hat seine Einkäufe von 55.756 Dollar in 1903 auf 208.908 Dollar in 1905 erweitert.

Die Charakteristike des Amerikaners

Die Bewohner anderer Länder besitzen gar ausgezeichnete Charakteristike, die es uns ermöglichen, die Eigenschaften der einen Nation von denen der anderen prompt zu unterscheiden. Für viele Amerikaner ist es durchaus nicht schwer einen englischen Besuch oder einen englischen Emigranten von einem Deutschen, Franzosen oder Italiener—ganz abgesehen vom Unterschiede der zwischen ihnen existirenden Sprache oder den persönlichen Eigenthümlichkeiten eines Nationaltypus—zu unterscheiden. Die Amerikaner selbst betrachten sich aus einem Material verschiedener Nationen hervorgegangen zu sein; in Folge dessen sind sie zu verschiedenartig um an und für sich einen ausgesprochenen Volkstypus bilden zu können. Das dies, jedoch, eine falscheAnsicht ist beweist die Schnelligkeit mit der Leute—vom Monarchen bis zum Badediener oder Kellner—einen Amerikaner auf dem ganzen europäischen Flachlande erkennen. Der Englander spricht zwar dieselbe Sprache wie der Amerikaner, sieht ihm ähnlich und doch wird er kaum mit dem "Vetter" verwechselt. Amerikaner scheinen so weit ausgesprochene Eigenthümlichkeiten des Charakters sowohl als der Manieren zu besitzen, dass sie ungewöhnlich leicht von anderen Menschen unterschieden werden können.

In einem Aufsatze der für eine Zeitschrift angefertigt wurde, versucht Tudor Jenks unsere wichtigeren Charakteristike hervorzuheben. Vor Allem zeichnen wir uns durch sogen. "smartness" aus, was zu gut Deutsch vielleicht mit Pfiffigkeit gleichbedeutend wäre. Wir sind fähig, scharf, schnell etwas "aufzufassen." Volkserziehung, häufiger Wohnortswechsel und Beschäftigung, sowie unsere demokratische, soziale Lebensweise haben uns mit "Ueberfluss" an geringer Lebensanforderung versehen, sei es auf dem Gebiete der Konversation oder in jeder anderen Lebensweise. Wir sind vielleicht etwas geschwätzig, ja unsere Geschwätzigkeit giebt uns sogar oft einen gewissen Humorssinn, der typisch amerikanisch geworden ist. Ausländer klagen uns oft der Prahlerei und Ungestühmheit an, doch sind sie selbst stets vorsichtig unter solcher Voraussetzung zu handeln. Wir sind eingebildet, nicht so sehr auf uns selbst als Individuen, sondern auf uns selber als eine Nation. Wir sind unseren Frauen gegenüber zuvorkommend; Ausländer sind der Ansicht dass wir unsere Frauen wie auch unsere Kinder durch allzugrosse Nachsicht verderben. Wir sind thatsächlich praktisch. Mehr als jede andere Nation sind wir geneigt über dieses und jenes nachzufragen; nicht was Andere darüber sagen oder denken, sondern was die Thatsache ist; wir fragen nicht etwa wie unsere Vorahnen gehandelt haben würden, sondern wie wir selbst handeln müssen.

Die Ansicht ist weit verbreitet, dass der Amerikaner in jeder Hinsicht Geschäftsmann sei—dass er Geld um Geldeswillen liebt. Viele Ausländer betrachten eben dies als unser Hauptcharakteristikum. Doch behauptet Herr Jenks, dass dies nicht der Fall sei. Er giebt zwar zu, dass wir mehr nach dem Gelde jagen wie jede andere Nation; nicht aus dem Grunde aber weil wir das Geld als solches lieben, sondern weil wir das damit zu erhalten wünschen, was Geld kaufen kann; und dann wiederum weil das Geld hierzulande mehr als irgendwo sonst kaufen kann. Es giebt in England und auf dem Kintinente Europas viele Schlösser, die Geld nicht erschliessen können, ganz ungeachtet wie würdig sein Besitzer auch sein mag. "In Amerika öffnet," nach Herrn Jenks, "der Dollar Jedem alle Thüren, vorausgesetzt natürlich, dass der Mann das ist was er sein soll und muss." Dass wir das Geld nicht lediglich des Geldes wegen allein lieben, sagt er, beweist schon die Generösität mit welcher wir dasselbe fortgeben und die Verschwendungssucht mit der wir es "spendiren."

Herrn Jenks Beschreibung über den Charakter des Amerikaners scheint, so weit in Berücksichtigung gezogen werden kann, eine sehr gute und richtige. Die von ihm hervorgehobenen Charaktereigenschaften sind wahrlich nicht daraufhin berechnet, ein Volk schätzenswerth und liebevoll zu machen. Vielmehr sucht er zu beweisen, dass hier mit einem gesunden, kräftigen, zuverlässigen Menschentypus gerechnet wird, der sich auf eigene Faust ohne die Liebe der Welt oder deren vollkommenen Gutheissung aller Ereignisse bewegen kann, so lange wenigstens, so lange er imstande ist sich den Respekt der Welt zu erhalten und sie seinen Zwecken diensthar zu machen.

Rasenmaschinen für den Export

Wir schätzen uns im Besitz eines illustrirten Kataloges der Chadborn & Coldwell Mfg. Co., Newburgh, N. Y., U. S. A., die sich einzig auf das von ihnen gebaute Assortiment solcher Rasenmähmaschinen für den Export beschränkt. Der Katalog ist erst jüngst gedruckt worden und enthält die diversen Maschinenmuster die heute von der Gesellschaft geliefert werden. Die verschiedenen Typen sind darin schön abgebildet und exakt beschrieben.

Während ihrer dreissigjährigen Thätigkeit auf dem Gebiete von Rasenmaschinen hat die Gesellschaft es sich zur Aufgabe gemacht, dieselben jeder Boder- und Klimabeschaffenheit bestens anzupassen und dadurch den Anforderungen jedes Landes gerecht werden zu können. Welch Wunder denn, dass dieser Mäher heute in jedem Lande wo Civilisation herrscht gefunden werden kann.

In Grossbritanien und den Kolonien, wie auch auf dem Kontinente Europas haben sich diese Mäher überall konkurrenzfähig erwiesen: heute bekunden sie in der ganzen Welt ihre Hervorragenheit und Beliebtheit.

Der Ausfuhrhandel der Gesellschait bildet eine grosse Abtheilung des Ganzen. Dem Versand und besonders dem Einpacken der Waare wird besondere Sorgfalt zugewandt. Schäden irgend welcher Art sind selten zu verzeichnen, nachdem die Waare ihren Bestimmungsort erreicht hat.

Käufer können stets sicher sein, dass ihren Aufträgen prompte und sorgfältige Aufmerksamkeit geschenkt werden wird: denn erstlich wird darauf gesehen, dass alle Anleitungen hinsichtlich des Markirens ausgeführt, auch dass die Richtigkeit der Addresse genau befolgt werde.

Das "Export Implement Age" befürwortet event. Korrespondenz seiner geschätzten Leser mit obiger Gesellschaft wo auch nur die leiseste Möglichkeit vorhanden, dass Interesse für diesen Artikel existiren dürfte. Auf Verlangen sendet die Gesellschaft Kataloge und jede sonstige Information die gewünscht werden sollte, franko.

Ein Luftschiff schwebt über New York

Zum ersten Mae haben New Yorker das Schauspiel einer praktischen Demonsttation der Luftschiffahrt zu sehen bekommen, und zwar war es der leitbare Ballon "Arrow" (Pfeil) des Herrn A. Roy Knabenshue, von

Toledo, Ohio, der durch seine Luftschiffahrts Experimente auf der letztjährigen Weltausstellung so bekannt geworden war. Dieser Ballon wurde von ihm selbst konstruirt und geleitet Die Fahrt fing von seinem Zelte, das sich auf einem freien Platze, westlich vom Central Parke an der 62. Strasse, wo es eingezäunt liegt, an. Herr Knabenshue machte zuerst einen Probeflug bis zum "Times" Gebäude an der 42. Strasse und Broadway und flog dann zurück. Am Mittwoch darauf führte er Manöverübungen nach verschiedenen Richtungen aus und zwar südlich am Broadway bis zum "Flatiron" Gebäude und kehrte nach jeder solchen Probe unversehrt nach der Abfahrtsstätte zurück. Eine grosse Menschenmenge versammelte sich, um diese Neuheit auf dem Gebiete der Luftschiffahrt persönlich in Augenschein nehmen zu können, eine Neuheit, die ihres kommerziellen Werthes wegen von doppeltem Interesse war. Ein lokales Blatt, das Kapital aus diesem Experiment schlagen wollte, beauftragte den Luftsegler einige Cheques in der Höhe von 1 bis 100 Dollar von schwindelnder Höhe beim Pfluge durch die Strassen und über Häuser herabzuwerfen. Ueber seine Erfahrung bei diesem Fluge berichtend, sagt Herr Knabenshue, dass er eine Anzahl gar eigenthümlicher Kreuz-Strömungen auf höchster Höhe erlebte, das ungefähr wie ein rauher Ocean auf stürmischer Reise war. Er erreichte die allerhöchste Maximumhöhe, 5000 Fuss, wo es ihm, wie er sagt, möglich war die "Taff-Tuffs" der Motorhörner und das Klingen der elektrischen Strassenbahnglocken unten in den Strassen zu hören.

Pflüge für den Versand

Wir erlauben uns die Aufmerksamkeit unserer geschätzten Leser auf die Annonce der "South Bend Chilled Plow Co." zu lenken, die auf der vorderen Deckelseite dieser Zeitschrift erscheint. Die Abbildung der Annonce zeigt, einen ihrer neuen Pflüge mit verstellbarem Punkte und Flügel, der sehr hervorragende Eigenschaften besitzt. Dieser Pflug ist auf ausländischen Märkten sehr beliebt geworden, hat sich in jedem Lande leicht eingeführt und dessen Fabrikanten empfehlen ihn besonders für kleeigen, kiesigen, steinigen oder harten, gewöhnlichen Boden. Die South Bend Gesellschaft die vorzugsweise Hartgusspflüge herstellt, erfreut sich eines ausgedehnten Ausfuhrhandels und ist gerne erhötig alle event. Anfragen und jedwede Bestellung prompt auszuführen. Korrespondenz jeder Art wird erbeten.

Windmaschinen und Thürme

Die "U. S. Wind Engine & Pump Co.," die in 1854 etablirt wurde, gehört zu den ältesten Windmotoren Fabriken der Welt. Ihre Erzeugnisse werden nach allen Welttheilen hin versandt und ihr Ruf ist weltberühmt geworden. Obgleich es als ausschliessliche Windmotorenfabrik anfing, sah sich die Gesellschaft doch bald genöthigt die vielen anderen Artikel herzustellen, die in Verbindung mit ihren Erzeugnissen stehen. Kurze Zeit nachdem die Gesellschaft ins Leben gerufen wurde fing sie an Pumpen, Wasserbehälter und Zubehörsartikel herzustellen und ist heute in der Lage ihrer Kundschaft nicht allein mit Windmotoren, sondern auch mit fast allen möglichen anderen Artikeln zu versehen, welche in dieser Branche gebraucht werden. Die Grössen ihrer Windmotoren variiren zwischen sechs und vierzig Fuss und werden sowohl aus Holz wie auch aus galvanisirtem Stahl hergestellt.

Die Herstellung von Stahlthürmen und deren event. Unterstrukturen zur Unterstützung hochgebauter Wasserbehälter gehören schon seit langem zu einer ihrer Hauptgeschäftsbranchen; erst seit kurzer Zeit wurde auch diese Abtheilung ausgedehnt um mit den stets wachsenden Anforderungen diesser Spezialartikel mithalten zu können. In Verbindung mit ihren Kraftmühlen fabriziren sie auch ein neues Assortiment Futtermahlmühlen, Maisenthülser, Holzsägen, u. s. w. und sind alle von ihnen fabrizirten Artikel daraufhin berechnet, die höchste Perfektion mit geringster Kraftanwendung zu verbinden.

Wie wir, eben, beim Schluss der Redaktion hören, sollen die neuen Gebäude welche von dieser Kompagnie zu bauen angefangen wurden ihrer Beendigung entgegen schreiten. Dieses Jahr wird somit die Batavia Gesellschaft noch besser als je ausgerüstet finden, ihre vielen Kunden mit den neuesten und besten Errungenschaft ihrer Erzeugnisse prompt bedienen zu können. Alle Exportangelegenheiten sollten an sie direkt nach Batavia, Ill., U. S. A., geschickt werden, wo ein Bureau für auswärtige Angelegenheiten, das eigens für diesen Zweck ins Leben gerufen wurde, es sofort erledigt. Anfragen erhalten ungesäumte Antwort und alle Aufträge werden mit grösster Sorgfalt ausgeführt.

Die Kraft Frage

Oft wird die Frage aufgeworfen, wie man passende und zufriedenstellende Kraft für besondere Arbeit beschaffen kann. Für einen Käufer der in gewisser Entfernung vom Orte der Lieferung wohnt ist es von gar grosser Wichtigkeit, dass er nur solche Kraft verwende die zuförderst Einfachheit, Sicherheit, Zuverlässigkeit, Stärke und Dauerhaftigkeit in hohem Masse einschliesst.

Um alle diese Anforderungen in jeder Weise genügen zu können, offerirt die wohlbekannte Firma James Leffel & Co., Springfield, Ohio, U. S. A., ein Assortiment von Kesseln und Dampfmaschinen von drei bis sechzig Pferdekräften in mannigfaltiger Verschiedenheit von Grössen und Sorten. Alles was der auswärtige Käufer auf diesem Gebiete nur brauchen kann liefert diese Firma, und wer ihren Maschinenkatalog genau geprüft, wird Alles darin finden, was er für seinen Zweck oder in jeder anderen speziellen Branche braucht.

Ein illustrirter und in jeder Hinsicht kompletter Katalog in englischer und deutscher Sprache, Preise und jede andere Information enthaltend, wird Jedem auf Wunsch franko zugestellt. Wer Bedürfnisse für oder nur Interesse in diesen Artikel hat, schreibe an die Fabrikanten: James Leffel & Co., Springfield, O., U. S. A.

Sprout, Waldron & Co.

Die Firma Sprout, Waldron & Co., Muncy, Pa., U. S. A., fabrizirt Maschinen aller Art zum Mahlen von Getreide irgend welcher Sorte. Der von ihr herausgegebene Katalog liefert eine vollständige Beschreibung über die diversen französischen Mahlsteine, über Abreibfutter, Futtermühlen, Leinsamenmühlen und Mühlen für Leinsamen-Oelkuchen, für Erzzerstückelungs-Maschinen, magnetische Vertheiler, Getreideenthülser, u. s. w. Die Firma erbietet sich ihren Katalog franko jedem unserer Leser auf Verlangen zu senden.

Amerikanische Rasenmaschinen

Diejenigen unserer geschätzten Leser, die sich für Rasenmähmaschinen, sei es für Hand- oder Pferdegebrauch, interessiren, sollten es ja nicht unterlassen sich einen Katalog, und zwar den neuesten der Firma Chadborn & Coldwell Mfg. Co., Newburgh, N. Y., U. S. A., zu verschreiben. Die Firma erbietet sich gern denselben gratis an unsere Leser überall zu senden. Die Gesellschaft erfreut sich des Rufes die besten Mähmaschinen aller Arten und Muster herzustellen und da sie bereits seit 1870 etablirt ist, erfreut sie sich auf jedem Weltmarkte eines gar ausgedehnten Handels. Korrespondenz in jeder Sprache wird prompt und befriedigend beantwortet.

A MODEL SYSTEM

Modern achievements owe much to system which is, of course, nothing more than organization in industrial and commercial life, or, indeed, any sphere of effort. When a task of large proportions is performed easily and efficiently by a carefully elaborated system it is interesting to note the simplicity upon which the operation is based. From a recent issue of the *Chicago Tribune* we quote the following account of a system in successful operation at the United States Military Academy at West Point, N. Y.:

March about 500 American youths, every one of them with an appetite of a farmer's son, into a dining room, give them only about forty minutes in which to eat their dinner, supply only one waiter to each twenty boys and you would be likely to have a riot on your hands in a few minutes.

Suppose, in addition, that back in the kitchen there are only two cooks for those lads.

Suppose that 500 portions of roast beef have to be carved and served between the time the lads begin to eat their soup and the time they finish it; that the vegetables and the dessert have to be served; that the dishes of each course have to be removed, and, finally, that these same boys have to be turned out in orderly fashion, with no confusion and with appetites sated.

Is not that a job that even the biggest of the modern hotels would not care to undertake?

That is what is done three times a day at the United States Military Academy at West Point. There isn't any riot in the mess hall or any confusion in the kitchen. The thing is possible because West Point owns the model kitchen of the country. The great hotel keepers are constantly sending their stewards and chefs to inspect it and to study its labor-saving devices.

The West Point kitchen is a food laboratory and a food factory combined. Everything possible is done by machinery. The roast beef is carved by a machine—500 cuts of it in less than five minutes. This machine does the work of five men. Potatoes are peeled by machinery.

The bread is mixed, kneaded, rolled into loaves and cut by machinery. The ice cream is made by machinery. The milk is sterilized by machinery.

The dishes are washed and dried by machinery. The cutlery is cleaned and sharpened by machinery, and the silver is polished in that way. The doors of the dining hall open and shut automatically as the waiters pass through.

And 500 pairs of jaws work in the dining hall as if they, too, were operated by machinery. The boys march in and out with the precision of machines.

Think of cooking 1,000 soft-boiled eggs at once. Think of arranging your store rooms with each article tagged and marked as to cost, so that at the end of each day you can figure out whether it has cost sixty-three or sixty-four cents to feed each boy for that day.

Think of a tile floored dining hall that is scrubbed with soap and water three times a day, and a kitchen in which the walls are washed down constantly and without the slightest odor. That you will find at West Point.

The place is equipped with its own ice making machine, with an electric lighting apparatus, with elevators and large cold storage places holding a month's supply of meat and fruit and nearly a year's supply of butter.

Captain Thomas Franklin has been in charge of the mess hall at West Point for four years, and it is he who has brought about this degree of perfection.

"How did you ever do it?" is the first question asked by visitors.

"Well, I read the newspapers," is his usual answer.

For more than two years Captain Franklin was studying kitchen devices and labor-saving methods. He traveled to all of the large cities of the country and inspected great kitchens. He read up on all the kitchen labor-saving machinery here and abroad.

He was confronted with the problem of not only providing good food, but of keeping the cost down. The government provides the mess hall, heat and light at West Point and the cadets pay the rest. They get something like $51 a month, and they have to feed and clothe themselves on that, and also to lay by $0.50 a month.

Has Captain Franklin solved the problem? The proof of the pudding is in the eating.

The West Point boys gain in weight fast the first year. Each year afterward they put on more weight, but more slowly than the first year. For the first three months of their stay they lose weight.

"That's when we are getting the buttermilk out of them," is the way Captain Franklin puts it

When the boys march into dinner they go to their places with precision, and each one folds his overcoat on the back of his chair. A plate of soup is at each one's place.

At a certain moment the roast beef cutter, if they have roast beef, starts up. The waiters, each with his own set of dishes, stand in a row. The meat is shoved on hot plates just taken from a warmer.

The waiters, still in line, get their vegetables on trays, and before the soup is finished the first man appears through the doors that open automatically, and the cadets have their solid food before them.

When they are finished they march out, and certain receptacles for scraps are brought in. The scraps are classified, and through the use of machinery in preparing the food the waste has been reduced from two cartloads a day to one-half cartload.

One of the most interesting of the kitchen machines is the potato parer. It consists of a big hopper, into which a bushel of potatoes is dumped. In the bottom and along the sides are what a housewife would call nutmeg graters. The skin is burred off the potatoes, and a saving of 80 per cent. is made over ordinary potato peeling. The eyes are removed by hand. The potatoes glisten almost as if they had frosting on them.

In the bakeshop every useful device has been adopted that Captain Franklin could find. By experiment, it is determined exactly how many pounds of flour and water are needed to make a certain batch of bread. The gauges are set, and the flour and water flow together into a big kneading trough, where rotating shafts and big wooden kneaders, that look like Indian clubs, mix and knead the mixture.

No hand touches it. Then it is put into a moulding machine, where the loaves are rolled out and slipped into pans. The loaves are exactly two feet long and round, with crust all around them.

The boys like crust, and the shape of the loaves is such that there is less waste in unused pieces than in any other form. So little waste is there that oftentimes the cooks have difficulty in getting enough to make bread crumbs from.

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Most hotels use machines for making ice cream, but they are of the old-fashioned sort, with salt and ice to finish the product. The West Point machine uses the brine from the refrigerating plant. The ice cream is pushed out when a tell-tale device announces that it is frozen, and then is made up into moulds.

The authorities at the Point are especially proud of their sterilizing plant for milk. All the milk used is purchased from a dairy across the river, which Captain Franklin inspects regularly. The milk is subjected to a heat of 180 degrees at first, and then passes to another tank heated at 100 degrees, and then to another heated at 34 degrees.

All this is done in three minutes, and the flavor of the milk gives not the slightest indication of the treatment it has received. What makes the authorities proud is that not a single case of typhoid or any other disease that can be traced to cow's milk has occurred at the institution since this sterilizing plant was put in.

The dish-washing machines consist of two parts. In the first part the dishes are washed, and in the other they are rinsed.

Each waiter has a wire crate for his dishes. The crates are lifted by a crane and soused first in a receptacle of soap and water; then in a receptacle where boiling water is kept swirling around by means of little propellers. The heat of the dishes by this time is such that they dry themselves.

All the knives are cleaned and sharpened by a little electric machine, and the silver is polished by an apparatus with a brush that makes 3,000 revolutions a minute.

In order to feed the cadets as cheaply as possible, all the supplies are purchased in large quantities. The meats are brought direct to the place by the carload from Chicago. A month's supply is brought at one time.

Groceries are purchased from the wholesalers as cheaply as any retail grocer can get them. The fruits and vegetables are bought in New York and other places at wholesale prices only.

The butter—a thing which does not improve with keeping—is purchased in the summer, and usually a year's supply is obtained. It has to be of the best grade. There is nothing purchased that is not of the best quality, and the result is that the West Point boys are fed as well and as cheaply as any in the land.

Every day the menu for twenty-four hours is written on a blackboard in the kitchen, so that the help may know what is to be prepared, and what duties are expected of them. Every clock in the kitchen is run on one standard, so that there may be no delay in cooking or serving the food

Toledo, Ohio, der durch seine Luftschiffahrts Experimente auf der letztjährigen Weltausstellung so bekannt geworden war. Dieser Ballon wurde von ihm selbst konstruirt und geleitet. Die Fahrt fing von seinem Zelte, das sich auf einem freien Platze, westlich vom Central Parke an der 62. Strasse, wo es eingezäunt liegt, an. Herr Knabenshue machte zuerst einen Probeflug bis zum "Times" Gebäude an der 42. Strasse und Broadway und flog dann zurück. Am Mittwoch darauf führte er Manöverübungen nach verschiedenen Richtungen aus und zwar südlich am Broadway bis zum "Flatiron" Gebäude und kehrte nach jeder solchen Probe unversehrt nach der Abfahrtsstätte zurück. Eine grosse Menschenmenge versammelte sich, um diese Neuheit auf dem Gebiete der Luftschiffahrt persönlich in Augenschein nehmen zu können, eine Neuheit, die ihres kommerziellen Werthes wegen von doppeltem Interesse war. Ein lokales Blatt, das Kapital aus diesem Experiment schlagen wollte, beauftragte den Luftsegler einige Cheques in der Höhe von 1 bis 100 Dollar von schwindelnder Höhe beim Pfluge durch die Strassen und über Häuser herabzuwerfen. Ueber seine Erfahrung bei diesem Fluge berichtend, sagt Herr Knabenshue, dass er eine Anzahl gar eigenthümlicher Kreuz-Strömungen auf höchster Höhe erlebte, das ungefähr wie ein rauher Ocean auf stürmischer Reise war. Er erreichte die allerhöchste Maximumhöhe, 5000 Fuss, wo es ihm, wie er sagt, möglich war die "Taff-Tuffs" der Motorhörner und das Klingen der elektrischen Strassenbahnglocken unten in den Strassen zu hören.

Pflüge für den Versand

Wir erlauben uns die Aufmerksamkeit unserer geschätzten Leser auf die Annonce der "South Bend Chilled Plow Co." zu lenken, die auf der vorderen Deckelseite dieser Zeitschrift erscheint. Die Abbildung der Annonce zeigt, einen ihrer neuen Pflüge mit verstellbarem Punkte und Flügel, der sehr hervorragende Eigenschaften besitzt. Dieser Pflug ist auf ausländrischen Märkten sehr beliebt geworden, hat sich in jedem Lande leicht eingeführt und dessen Fabrikanten empfehlen ihn besonders für kleeigen, kiesigen, steinigen oder harten, gewöhnlichen Boden. Die South Bend Gesellschaft die vorzugsweise Hartgusspflüge herstellt, erfreut sich eines ausgedehnten Ausfuhrhandels und ist gerne erbötig alle event. Anfragen und jedwede Bestellung prompt auszuführen. Korrespondenz jeder Art wird erbeten.

Windmaschinen und Thürme

Die "U. S. Wind Engine & Pump Co.," die in 1854 etablirt wurde, gehört zu den ältesten Windmotoren Fabriken der Welt. Ihre Erzeugnisse werden nach allen Welttheilen hin versandt und ihr Ruf ist weltberühmt geworden. Obgleich es als ausschliessliche Windmotorenfabrik anfing, sah sich die Gesellschaft doch bald genöthigt die vielen anderen Artikel herzustellen, die in Verbindung mit ihren Erzeugnissen stehen. Kurze Zeit nachdem die Gesellschaft ins Leben gerufen wurde fing sie an Pumpen, Wasserbehälter und Zubehörsartikel herzustellen und ist heute in der Lage ihrer Kundschaft nicht allein mit Windmotoren, sondern auch mit fast allen möglichen anderen Artikeln zu versehen, welche in dieser Branche gebraucht werden. Die Grössen ihrer Windmotoren variiren zwischen sechs und vierzig Fuss und werden sowohl aus Holz wie auch aus galvanisirtem Stahl hergestellt.

Die Herstellung von Stahlthürmen und deren event. Unterstrukturen zur Unterstützung hochgebauter Wasserbehälter gehören schon seit langem zu einer ihrer Hauptgeschäftsbranchen; erst seit kurzer Zeit wurde auch diese Abtheilung ausgedehnt um mit den stets wachsenden Anforderungen diesser Spezialartikel mithalten zu können. In Verbindung mit ihren Kraftmühlen fabriziren sie auch ein neues Assortiment Futtermahlmühlen, Maisenthülser, Holzsägen, u. s. w. und sind alle von ihnen fabrizirten Artikel daraufhin berechnet, die höchste Perfektion mit geringster Kraftanwendung zu verbinden.

Wie wir, eben, beim Schluss der Redaktion hören, sollen die neuen Gebäude welche von dieser Kompagnie zu bauen angefangen wurden ihrer Beendigung entgegen schreiten. Dieses Jahr wird somit die Batavia Gesellschaft noch besser als je ausgerüstet finden, ihre vielen Kunden mit den neuesten und besten Errungenschaft ihrer Erzeugnisse prompt bedienen zu können. Alle Exportangelegenheiten sollten an sie direkt nach Batavia, Ill., U. S. A., geschickt werden, wo ein Bureau für auswärtige Angelegenheiten, das eigens für diesen Zweck ins Leben gerufen wurde, es sofort erledigt. Anfragen erhalten ungesäumte Antwort und alle Aufträge werden mit grösster Sorgfalt ausgeführt.

Die Kraft Frage

Oft wird die Frage aufgeworfen, wie man passende und zufriedenstellende Kraft für besondere Arbeit beschaffen kann. Für einen Käufer der in gewisser Entfernung vom Orte der Lieferung wohnt ist es von gar grosser Wichtigkeit, dass er nur solche Kraft verwende die zuförderst Einfachheit, Sicherheit, Zuverlässigkeit, Stärke und Dauerhaftigkeit in hohem Masse einschliesst.

Um alle diese Anforderungen in jeder Weise genügen zu können, offerirt die wohlbekannte Firma James Leffel & Co., Springfield, Ohio, U. S. A., ein Assortiment von Kesseln und Dampfmaschinen von drei bis sechzig Pferdekräften in mannigfaltiger Verschiedenheit von Grössen und Sorten. Alles was der auswärtige Käufer auf diesem Gebiete nur brauchen kann liefert diese Firma, und wer ihren Maschinenkatalog genau geprüft, wird Alles darin finden, was er für seinen Zweck oder in jeder anderen speziellen Branche braucht.

Ein illustrirter und in jeder Hinsicht kompletter Katalog in englischer und deutscher Sprache, Preise und jede andere Information enthaltend, wird Jedem auf Wunsch franko zugestellt. Wer Bedürfnisse für oder nur Interesse in diesen Artikel hat, schreibe an die Fabrikanten: James Leffel & Co., Springfield, O., U. S. A.

Sprout, Waldron & Co.

Die Firma Sprout, Waldron & Co., Muncy, Pa., U. S. A., fabrizirt Maschinen aller Art zum Mahlen von Getreide irgend welcher Sorte. Der von ihr herausgegebene Katalog liefert eine vollständige Beschreibung über die diversen französischen Mahlsteine, über Abreibfutter, Futtermühlen, Leinsamenmühlen und Mühlen für Leinsamen-Oelkuchen, für Erzzerstückelungs-Maschinen, magnetische Vertheiler, Getreideenthülser, u. s. w. Die Firma erbietet sich ihren Katalog franko jedem unserer Leser auf Verlangen zu senden.

Amerikanische Rasenmaschinen

Diejenigen unserer geschätzten Leser, die sich für Rasenmähmaschinen, sei es für Hand- oder Pferdegebrauch, interessiren, sollten es ja nicht unterlassen sich einen Katalog, und zwar den neuesten der Firma Chadborn & Coldwell Mfg. Co., Newburgh, N. Y., U. S. A., zu verschreiben. Die Firma erbietet sich gern denselben gratis an unsere Leser überall zu senden. Die Gesellschaft erfreut sich des Rufes die besten Mähmaschinen aller Arten und Muster herzustellen und da sie bereits seit 1870 etablirt ist, erfreut sie sich auf jedem Weltmarkte eines gar ausgedehnten Handels. Korrespondenz in jeder Sprache wird prompt und befriedigend beantwortet.

INTENTIONAL SECOND EXPOSURE

A MODEL SYSTEM

Modern achievements owe much to system which is, of course, nothing more than organization in industrial and commercial life, or, indeed, any sphere of effort. When a task of large proportions is performed easily and efficiently by a carefully elaborated system it is interesting to note the simplicity upon which the operation is based. From a recent issue of the *Chicago Tribune* we quote the following account of a system in successful operation at the United States Military Academy at West Point, N. Y.:

March about 500 American youths, every one of them with an appetite of a farmer's son, into a dining room, give them only about forty minutes in which to eat their dinner, supply only one waiter to each twenty boys and you would be likely to have a riot on your hands in a few minutes.

Suppose, in addition, that back in the kitchen there are only two cooks for those lads.

Suppose that 500 portions of roast beef have to be carved and served between the time the lads begin to eat their soup and the time they finish it: that the vegetables and the dessert have to be served; that the dishes of each course have to be removed, and, finally, that these same boys have to be turned out in orderly fashion, with no confusion and with appetites sated.

Is not that a job that even the biggest of the modern hotels would not care to undertake?

That is what is done three times a day at the United States Military Academy at West Point. There isn't any riot in the mess hall or any confusion in the kitchen. The thing is possible because West Point owns the model kitchen of the country. The great hotel keepers are constantly sending their stewards and chefs to inspect it and to study its labor-saving devices.

The West Point kitchen is a food laboratory and a food factory combined. Everything possible is done by machinery. The roast beef is carved by a machine—500 cuts of it in less than five minutes. This machine does the work of five men. Potatoes are peeled by machinery.

The bread is mixed, kneaded, rolled into loaves and cut by machinery. The ice cream is made by machinery. The milk is sterilized by machinery.

The dishes are washed and dried by machinery. The cutlery is cleaned and sharpened by machinery, and the silver is polished in that way. The doors of the dining hall open and shut automatically as the waiters pass through.

And 500 pairs of jaws work in the dining hall as if they, too, were operated by machinery. The boys march in and out with the precision of machines.

Think of cooking 1,000 soft-boiled eggs at once. Think of arranging your store rooms with each article tagged and marked as to cost, so that at the end of each day you can figure out whether it has cost sixty-three or sixty-four cents to feed each boy for that day.

Think of a tile floored dining hall that is scrubbed with soap and water three times a day, and a kitchen in which the walls are washed down constantly and without the slightest odor. That you will find at West Point.

The place is equipped with its own ice making machine, with an electric lighting apparatus, with elevators and large cold storage places holding a month's supply of meat and fruit and nearly a year's supply of butter.

Captain Thomas Franklin has been in charge of the mess hall at West Point for four years, and it is he who has brought about this degree of perfection.

"How did you ever do it?" is the first question asked by visitors.

"Well, I read the newspapers," is his usual answer.

For more than two years Captain Franklin was studying kitchen devices and labor-saving methods. He traveled to all of the large cities of the country and inspected great kitchens. He read up on all the kitchen labor-saving machinery here and abroad.

He was confronted with the problem of not only providing good food, but of keeping the cost down. The government provides the mess hall, heat and light at West Point and the cadets pay the rest. They get something like $51 a month, and they have to feed and clothe themselves on that, and also to lay by $9.50 a month.

Has Captain Franklin solved the problem? The proof of the pudding is in the eating.

The West Point boys gain in weight fast the first year. Each year afterward they put on more weight, but more slowly than the first year. For the first three months of their stay they lose weight.

"That's when we are getting the buttermilk out of them," is the way Captain Franklin puts it

When the boys march into dinner they go to their places with precision, and each one folds his overcoat on the back of his chair. A plate of soup is at each one's place.

At a certain moment the roast beef cutter, if they have roast beef, starts up. The waiters, each with his own set of dishes, stand in a row. The meat is shoved on hot plates just taken from a warmer.

The waiters, still in line, get their vegetables on trays, and before the soup is finished the first man appears through the doors that open automatically, and the cadets have their solid food before them.

When they are finished they march out, and certain receptacles for scraps are brought in. The scraps are classified, and through the use of machinery in preparing the food the waste has been reduced from two cartloads a day to one-half cartload.

One of the most interesting of the kitchen machines is the potato parer. It consists of a big hopper, into which a bushel of potatoes is dumped. In the bottom and along the sides are what a housewife would call nutmeg graters. The skin is burred off the potatoes, and a saving of 80 per cent. is made over ordinary potato peeling. The eyes are removed by hand. The potatoes glisten almost as if they had frosting on them.

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CHINESE STUDENTS OF PROGRESS

The imperial commission which has left China for an extended tour in America and Europe has for its ostensible object the systematic collection of information in regard to the political, financial, and administrative methods of Western nations; its real purpose, however, is, without doubt, to impress those nations with the sincerity and efficacy of the reforms that China is making, and thus to engage their sympathies for the abolition of extra-territoriality. History repeats itself, and those who remember the objects and results of the Burlinghame mission (1867) will watch the present experiment with interest. From the picturesque standpoint the commissioners and their suites cannot fail to attract attention; their intelligence and culture are also likely to give the world a high (and entirely erroneous) idea of the system which produces such results. Many of the eighty attachés and secretaries who accompany Tuan-fang (governor of Hu-nan), Duke Tsai, and their colleagues are picked men, capable of satisfactorily demonstrating to polite audiences in Washington and London their country's fitness to join the comity of nations on a footing of equality—men who understand the exigencies of international politics and a wise use of the press. No doubt Europe will therefore be suitably impressed, and the triumphs of Wu Ting-fang will be repeated on a larger scale in the United States. But China, to which the imperial commissioners thereafter return, will still be, for all the purposes of civilization, as unregenerate as when she sent forth the Burlinghame mission on a similar errand forty years ago. She has abolished torture by edict, but even Wu Ting-fang, who saw the necessity for the concession to Western humanitarians, left it permissible in cases of robbery and murder, "where the evidence is conclusive and the accused recalcitrant," and the edict is likely to help none but the traveling commissioners. She has gratefully acknowledged the valuable help of Prof. Jenks, who left Peking assured that his suggestions for the establishment of a gold standard would be adopted, and she has fulfilled the currency clause of the Mackay treaty by debasing the copper coinage of the country while leaving the confusion of silver exchanges without practical remedy. She has proclaimed her decision to develop her own railways and mines; and provincial bureaus, of the usual hopelessly corrupt type, have sprung up on all sides, but their intentions may fairly be gauged by those of the governor general of Szechuen, who, having collected some £60,000 from the patriotic gentry of that province, announces that the money will be devoted to the establishment of a college for training engineers. When these are trained the construction of the railways can properly be dealt with. She is prepared to abolish likin, but while the Mackay treaty was yet unratified she had evolved an ingenious system of native customs branches calculated to harass the trader as effectively as ever. She has established schools of western learning, and a board of comparative politics, but, although there is no lack of earnest and patriotic men who really aim at improved education, and although genuine progress has been made in certain districts, the government recognizes no merit but that of money. It will require men much wiser than the students of young China, much better disposed than the Cantonese "reformers" of Kang Yu-wei's following, to lead the country into paths of political and moral enlightenment; and without material change in the system of government progress is impossible.

Peace, imperial commissioners and edicts, the object of the Chinese government to-day, is unmistakably what it was when first she came into contact with the vanguard of commerce militant, and what that object is I cannot state better than by repeating the words of one who wrote on the subject of the Burlinghame mission in 1869—Mr. Ross Browne, ex-minister of the United States at Peking. Severely criticising Mr. (now Sir Robert) Hart's plea for patience and non-interference in dealing with China's tardy performance of her promises of progress, he says:

"The object, therefore, was to prevent all progress inconsistent with Chinese isolation. * * * There is nothing in the history of China, since the beginning of foreign intercourse, to warrant the idea that the imperial rulers had the slightest idea of entering into such relations as contemplated by the law of nations. What they really wanted was time—time to repeat on a large scale what they had done in the way of preparation to repel foreign intrusion at Canton from 1842 to 1857, and at Taku from 1858 to 1859; time to establish arsenals, build gunboats, poison the minds of the people throughout the provinces, and in the end, when no longer able to postpone the excention of treaties, make a final attempt to drive every foreigner out of the country."

Were it possible, either by outside pressure or by the will of the people, radically to reform the Chinese system of government, there would be no need of pessimism in writing of the commercial and social future of the empire, for the people are well disposed (unless their religious or social customs are attacked), and the country offers vast fields for educational and industrial enterprise. As matters stand, while from a certain philosophic standpoint we may question the right of Europeans to impose their unwelcome presence on the Chinese and admit the latter's right to protect themselves against it by all means, it seems inevitable that sooner or later either the treaties will once more have to be enforced *vi et armis*, or the rights they confer be largely abandoned.—*London Times.*

ENGLAND AND FREE TRADE

Free trade, which has been the policy of England for sixty years, is again on trial and the battle waxes fierce. There is a growing effort to work in the thin wedge of "a moderate tariff not protective but defensive," but the opposition are fighting it with every weapon in their armory of protest. England to-day is not self-supporting, her rural industries have been declining for years, and the country receives from abroad the far larger quantity of its food and raw material.

Thirty per cent. of the people are underfed and on the verge of hunger. Thirty per cent. of forty-one millions comes to over twelve millions.

This significant statement comes from the lips of Sir Henry Campbell-Bannerman, the new English premier, in a speech against the proposal for preferential tariffs with the colonies, at Perth on June 5, 1903. Three years has not changed the situation for the better.

Winston Churchill, M. P., puts the situation thus:

"The mass of people are absolutely dependent for the food they eat and the material they employ upon supplies of food and raw material which reach them mainly from abroad. They are dependent on the condition of a crop at one end of the world and the state of a market at the other; and yet, upon this artificial foundation, through this inestimable advantage of unfettered enterprise and of unrestricted sea communication, they have been able to build up a vast industrial fabric which it is no exaggeration to say is the economic marvel of the world."

In 1904, the amount of merchandise brought into the United Kingdom was nearly $2,640,000,000. For thirty years England's imports have been rapidly increasing while her exports have remained stationary, and if we deduct coal from them they have actually decreased. The situation can be put in a way readily appreciated by Americans if we realize that the entire British Isles are smaller than New Mexico, and yet contain about half as many people as are in the United States.

It is the foreign trade of Great Britain that is claimed to be the salvation of the nation. In 1904 this amounted to over $4,900,000,000, and last year, the figures for which have not yet been published, was the greatest in over-sea trade in the history of the nation.

Sir Henry Fowler, a member of the late Liberal cabinet as Chancellor of the Duchy of Lancaster, in a recent speech said:

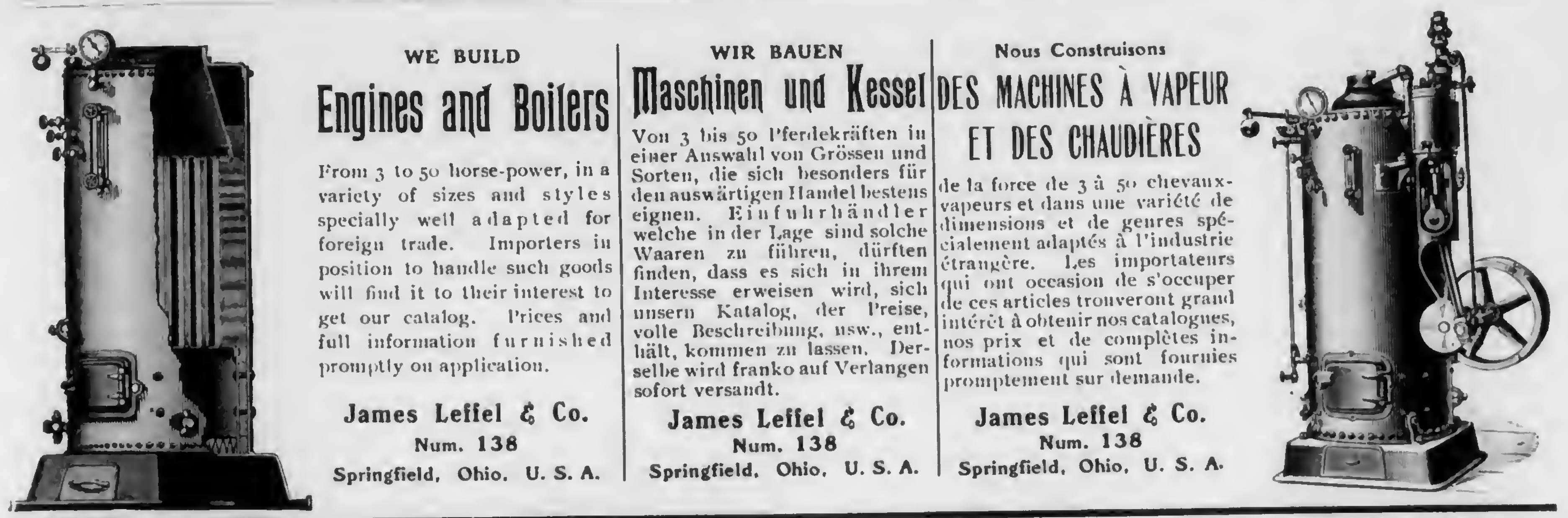
"The question of free trade is the greatest which has been before the country for the past half century. The young men of to-day are absolutely ignorant. They do not know what it means and the issues it involves. If the great system of free trade were interfered with, if the attempt were successful which is being made to reverse the policy of the past sixty years on which the overwhelming bulk of political economists were united, I foretell for this country a time of the greatest disaster. All classes would suffer, especially the work class."

Dealing with the question of exports and imports, he pointed out:

"Eighty per cent. of what came into Great Britain represented raw material necessary for manufactures and food necessary for the people. Therefore the prosperity of this country depends not upon its exports, but upon its imports. We are free traders not for the injury it does others, but in our own interests. It is to our advantage to buy cheap. Our greatest import is food and the next raw material. We can only pay by our own manufactures."

WORLD'S BIGGEST BRIDGE

The biggest bridge in the world is to be in Quebec. The Quebec cantilever bridge now building over the St. Lawrence River will have a single span of 1,800 feet. The Williamsburgh suspension bridge over the East River has a span of 1,600 feet, only five feet greater than that of the Brooklyn bridge. Aside from suspension bridges, whereof these are the greatest, there is the Forth railway bridge, with two spans of 1,710 feet each.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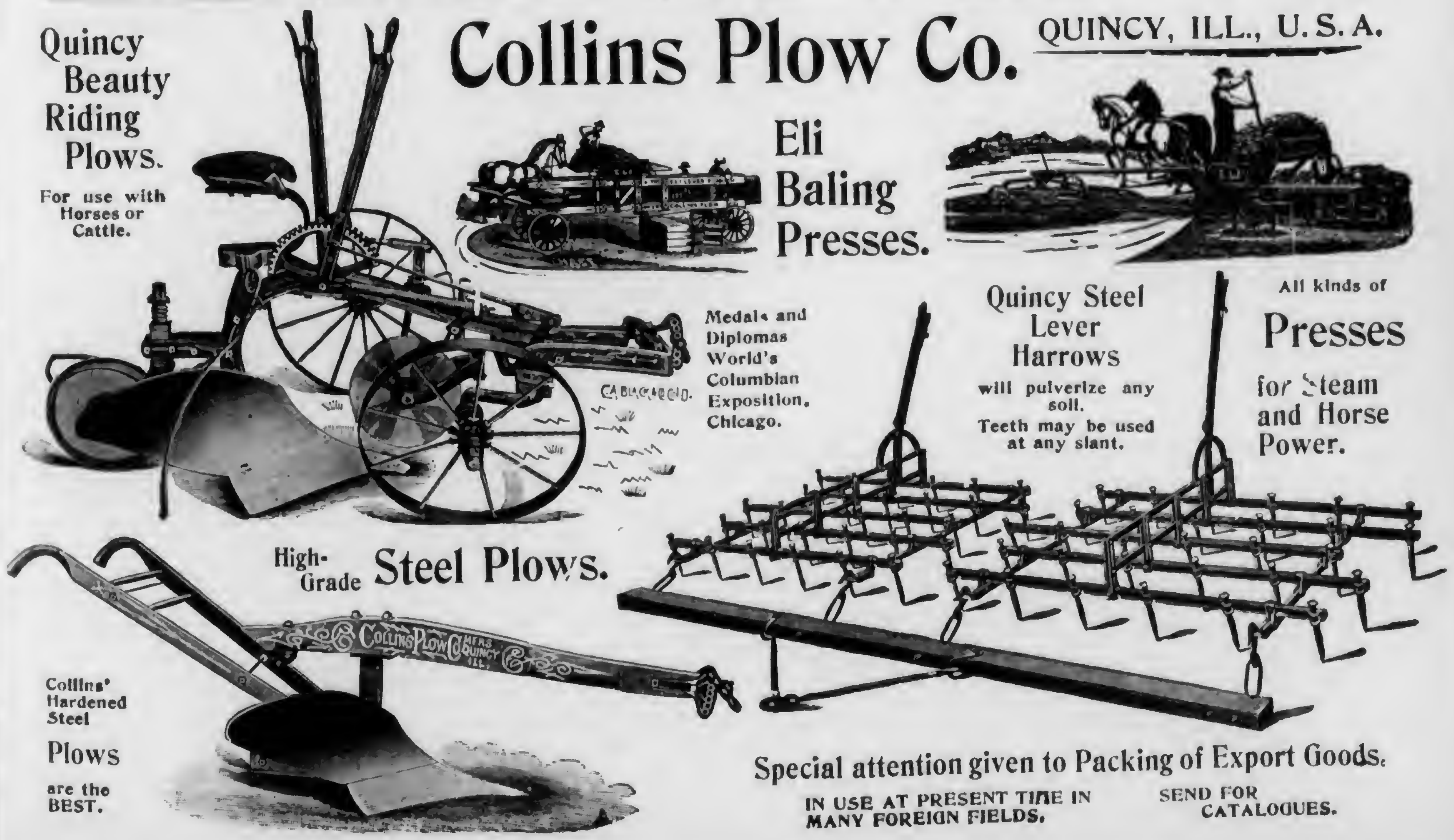
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SOME RECENT INVENTIONS

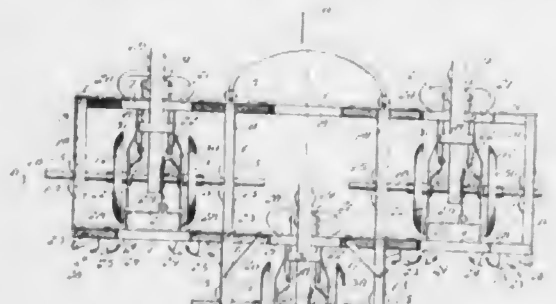
The following recent inventions have been specially reported for the EXPORT IMPLEMENT AGE by C. LeRoy Parker, Solicitor for Patents, 707 G street, N. W., Washington, D. C., U. S. A.

Corn Cultivator

No. 778,652. Henry Funkner.

This invention pertains to a three-row corn-cultivating machine especially adapted to cultivate corn planted with a lister plow. Rows of corn planted by an implement of this kind are not equally spaced, but vary several inches on one side or the other of the correct distance which should separate the rows.

When cultivating corn planted as above described, especially with a three-row cultivator, it is necessary to provide some means for quickly adjusting the cultivating mechanisms that they may accord with the differences in width between the various rows of corn and retain such adjusted position so long as the row is straight, but which will enable each individual cultivating mechanism to follow all irregularities in the row over which it is working. To accomplish the ends sought a plurality of mechanisms are independently mounted in a rigid frame, each cultivating mechanism being supported on rollers which enable it to move or be moved laterally to the right or left, that it may travel at all times centrally over the row of corn under cultivation by said mechanism.



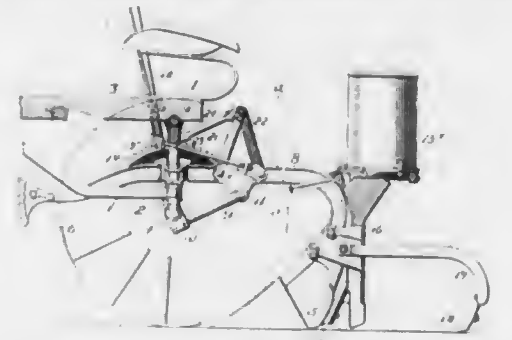
When cultivating corn the first time the shovels and moldboards are in the position shown in the illustration. The moldboards 25 as the cultivator passes through a field loosen the earth on the ridges and throw it higher up, while the shovels 24 bring a little loose earth to the young corn plants. In going through corn the second time no change is made in the position of the moldboards and shovels 24; but the shovels 26 are attached to the ends of the beams outside the moldboards to kill the weeds in the center of the ridges. The moldboards again throw the earth outwardly; but the inner shovels 24 are set to throw a greater quantity of earth around the corn. At the third cultivation the moldboards are turned so as to throw earth around the base of the corn, while one or both shovels may be used to cultivate the ground between the rows.

Seeding Machine

No. 773,947. A. Lindgren.

This invention has reference to machines for planting cotton, corn and other seeds, and relates more particularly to the type of machine embodying a wheeled frame, in which is mounted a vertically-adjustable beam equipped with furrow-opening devices, a seed-dropping mechanism, and covering devices. In the use of machines of this type, particularly in the planting of cotton-seed, it is sometimes desirable to deposit the seed on the top of a ridge with the ground-wheels running in the trench, while at other times the seed are planted in the trench with the wheels running on the top of the ridge, and at other times the seed are planted on a level. To adapt the machine for these different conditions requires a corresponding vertical adjustment of the beam, and it is desirable that under these adjustments the beam remain horizontal or on a level, so that the furrow-opener, the seed-spout and the covering devices will work at the same depth.

This invention is directed to this end; and it consists in the means shown for raising and lowering the beam and holding it in the desired position, and of a connection between the beam and the frame acting automatically to maintain the horizontal position of the beam or its level, notwithstanding the position of the parts vertically.

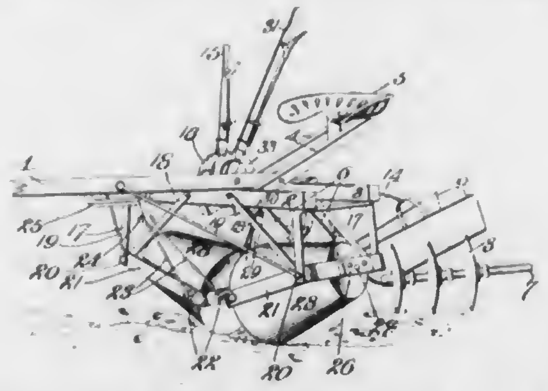


Lister Cultivator

No. 773,753. K. M. Kimbrough.

This invention relates to lister-cultivators of that type provided with disks for turning the soil and wheels or rollers for supporting the machine when the disks are raised; and the object is to produce a machine of this character which will tend to facilitate the growth of the plants cultivated by crushing practically all of the clods which might pack upon the plants and either kill them or stunt their growth.

In cultivating, the parts are arranged as shown, except that the fender is lowered instead of being raised, the pitch of the lower surface of the rollers corresponding approximately to the sides of the furrow in order that clods in the banks of the furrow may be crushed. The rollers, furthermore, by rolling upon the banks for their full width serve to remove irregularities from their surface, to the end that the disks traveling in the rear of and slightly deeper than the rollers shall turn a volume of earth toward the plants which is practically uniform from one end of the furrow to the other, the fender, as usual, preventing or guarding against the plants being smothered by the soil turned in such operation.

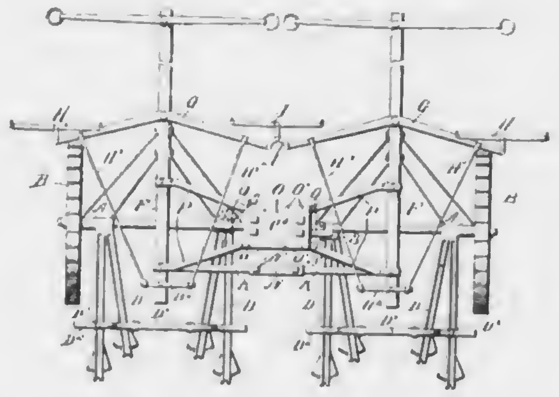


Cultivator

No. 778,724. Oscar M. Voiles. Dec. 27, 1904.

The object of the invention is to produce a cultivator which may be adjustable and so arranged as to cause the cultivator plows to operate in connection with rows of different widths.

The cultivator comprises two arched sections with wheels journaled in the outer ends thereof, and a block having apertures therein and carrying set screws. The block is adapted to receive the inner ends of the axle-sections and to be held by said screws in adjusted positions. Draft poles are secured to the arched axle sections. Curved brace rods are secured to said arched axle sections and have their upper ends held in the brace-engaging block. The curved brace rods have vertical portions secured to upright portions of the arched axle sections and have their lower portions curved toward each other. Branching and slotted drag-bars are secured to the axle sections, and arched members connect said drag-bars.

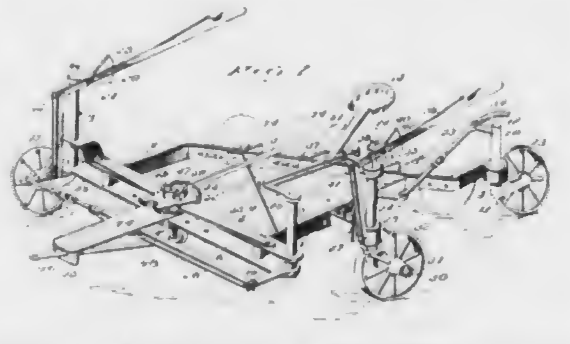


Wheel Plow

No. 777,935. Henry H. Boenker.

This invention has relation most especially to the general structure, to the peculiar mountings of the parts, and to the names whereby the working elements are adjustable either by hand or through the instrumentality of the draft.

An essential feature of the invention is the arrangement of the ground wheels and the parts co-operating therewith, whereby the machine is enabled to make a short turn or to be quickly swerved from a direct line in order to avoid an obstruction or for any desired purpose.



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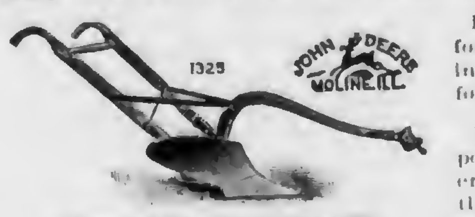

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SOME RECENT INVENTIONS

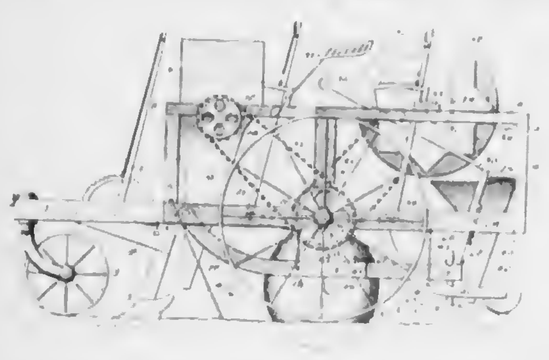
(Continued from page 31)

Planter

No. 777,842. H. J. Cordle.

The object of the invention is to provide a planter consisting of a frame-work mounted upon wheels and having located at its forward end a pivoted plow with a lever for operating the same, said plow being adapted to open a furrow. A fertilizer dropper is located upon the frame-work and is adapted to deposit fertilizer in the furrow made by the said plow.

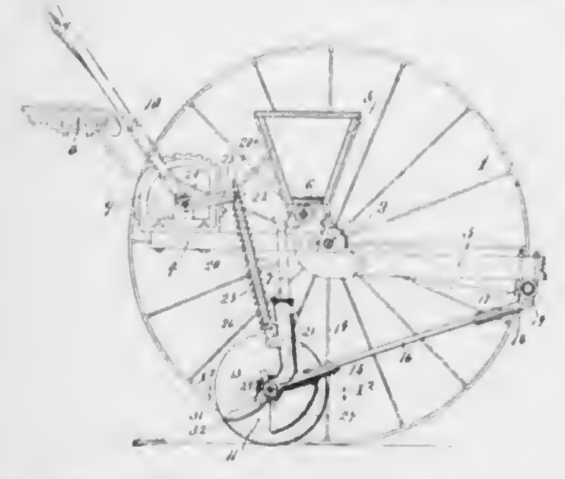
A second frame-work is pivoted to the first said frame-work, and disks are carried by the said second frame. A means is provided whereby the angle of said disks may be adjusted with relation to the line of draft. Said disks are adapted to list the earth over the fertilizer deposited in the furrow made by the fall of the plow. Said second frame is also provided with a seed-furrow opener, which is located behind said disks. A seed dropper is carried by the frame-work of the device and is adapted to deposit seed in the furrow made by said opener. A coverer is attached to the frame-work and is adapted to cover the seed so deposited.



Disk Drill

No. 782,319. Thomas Brennan, Jr.

A disk drill having a seed boot and a disk journaled thereto, said boot having a seed conduit extending forward of the disk journal, and having a guard plate extending below and forward of said disk journal, said guard plate and disk, when the latter is standing still, co-operating to hold back the seeds, and said disk operating, when rotated under the advance movement of the machine, to discharge the seeds into the furrow.

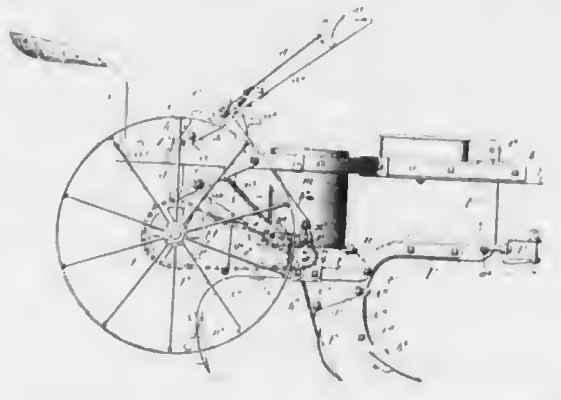


Planter

No. 783,374. Charles P. Friberg.

The invention relates to that class of machines that are adapted to plant either corn or cotton and are convertible from one kind of work to the other without change in any of the parts except the substitution of the appropriate seed-dropping devices.

The novel features of the invention are confined to the manner of mounting and operating the opener, the seed box, the seed-spout shovel and the covering hoes. The seed-dropping devices and their driving mechanism (except a certain arrangement for throwing them out of operation) are old and well known.



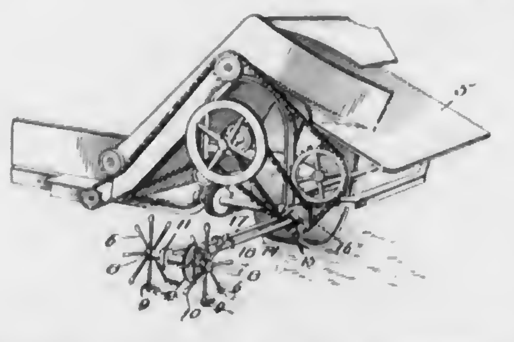
According to the present invention the front middle sweep or opener, the seedbox, its spout and shovel, and the rear covering hoes are all mounted on a frame that is supplemental to the main frame of the machine and may be raised or lowered bodily, so as to vary the depth to which all the working parts enter the ground, and which may also be tilted in a fore-and-aft vertical plane, so as to allow considerable range of variation in the depth of cut of the front sweep or "middle breaker," as it is called, without materially altering the vertical position or depth of cut of the seed-spout shovel and the covering hoes. This supplemental frame is suspended from a wheel frame and has a rigid tongue and is controlled by adjusting levers that are adapted to be locked, so as to set the frame higher or lower, and the draft devices are connected to the front end of the supplemental frame. The adjusting lever, which raises and lowers the frame bodily, may be thrown out of action so as to allow the frame to rest normally on the ground and to have a floating action when in operation, due to the team drawing upon it.

Attachment for Harvesters

No. 782,960. Milton T. Harris.

This invention relates to an attachment for harvesters, and more particularly an attachment to be coupled thereto to furnish or augment the necessary power required to run the operating parts when the ground is soft and muddy and the ordinary ground wheels of the machine slide and fail to properly perform their function.

The invention consists in an element rotatable by contact with the ground, said element being detachably connected to the harvester and drawn thereby. A gearing is also provided for transmitting the motion of the element to a driven part of the harvester.

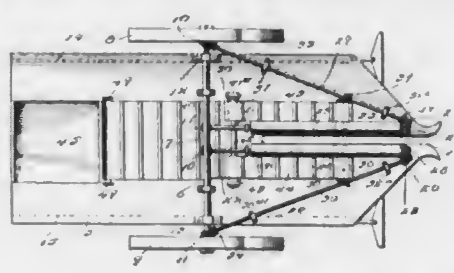


The patent covers the combination with a harvester of a supplemental driving attachment therefor comprising an axle, a pair of spider wheels thereon, a tongue extending from the axle and detachably connected to the harvester, a bearing on the tongue, a shaft in the bearing and flexibly connected at one end to a driven part of the harvester, a gear wheel on the opposite end of the shaft, and a gear wheel on the axle and in mesh with the other gear wheel.

Corn Gatherer

No. 778,663. Ezra Hollis.

This invention relates to that class of corn gatherers wherein the corn is pulled from the stalk and delivered to aprons which convey it rearwardly to a box, the object of the invention being to provide a construction wherein the ears of corn will be removed from the stalks without injury to the corn and will be deposited without waste in the box.



The operation of the implement is as follows: The horse is driven to walk between the rows of corn, and the forward flared end of the stalk-receiving slot of the platform receives the stalks of a row of corn, said stalks passing into engagement with gathering rollers, which by their upward peripheral movement and their slanting arrangement move upwardly of the stalks and act to pinch the ears from the stalks, the ears pressing outwardly over the rollers and falling upon the aprons at the sides of the gathering rollers, from which they are discharged rearwardly and onto the apron, which in turn discharges them to the box where they are husked in any desired manner.

A MARVELOUS MEASUREMENT

An instrument of such wonderful delicacy has been constructed by Professor P. E. Shaw, of the University College, Nottingham, Eng., that one seventy-millionth part of an inch can be measured. The apparatus has to be suspended by rubber bands from a frame in a felt-covered box, and it can be used only at night time, when all factory machinery in the vicinity is at rest. The machine has already been applied to practical use in the improvement of the telephone, as it will measure the smallest audible movement of the diaphragm. It is also expected to serve as a delicate coherer in wireless telegraphy, and possibly in determining the movements of the molecules of matter.

A report issued by the Interstate Commerce Commission shows that railway capitalization in this country has increased at an enormous rate in the last few years. From $9,894,625,239, or $59.73 a mile in 1893, it had increased in 1904 to $13,213,124,679, or $64.26 a mile. The increase in freight rates augmented the receipts and made possible an increase of $230,000,000 in dividends last year.

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CROP REPORTS

A plan for a reorganization of the crop reporting system of the government has been submitted to the agricultural committee of Congress by Mr. Hayes, assistant secretary of the agricultural department. It is proposed, if possible, to correct the defects in the system and so perfect it that accurate statistics of the crop conditions and final results from month to month can be obtained and reported upon by the department. The chief feature of the new plan is that it seeks to abandon the old policy of collecting reports on crop conditions from various sources and assembling them in Washington to be passed upon by one man as the head of the statistical bureau.

If Congress adopts the plan outlined by Mr. Hayes it will increase the annual cost of the crop reporting system from $10,000 a year to about $250,000 a year. The increased cost of the service will be necessitated as the result of the abandonment of the present system of State and county collections of crop statistics and the creation of about thirty-five district chiefs, who will work in conjunction with the weather bureau officials at the principal stations in each State.

A district chief will be assigned to each of the principal cereal and cotton States, and will collect reports from township reporters, and will also travel throughout their districts and obtain facts first hand. The county reports will continue to come to the department here. The crop estimating board of the department will be continued, but the final estimates in most cases will be made up almost wholly by the district chiefs.

In addition to the new arrangement for district reporting, a number of special agents to travel over the entire country will be made a part of the system, and they will contribute as much as possible in aiding the district chiefs to obtain accurate information regarding crop conditions. The question which confronts the department is whether Congress will be willing to make these changes and incur the additional expense, even upon the representation of the department that greater accuracy is certain to be obtained therefrom.—*Hay Trade Journal.*

EMIGRATION FROM EUROPE

The subject of immigration has never been a more important one to the United States than at the present time. The fields, shops, and mills of our country are all calling for more labor. From what source shall it come is the interesting question. The tide of emigration from northern Europe has ebbed, and Italy's sons have been coming in peaceful armies to our aid. But this, too, will decrease, since Italy is becoming depleted. Another Mediterranean country is Spain, the only European country that has not yet started a tide of emigration for our shores. That the Spaniard has not yet caught the migrating fever seriously is evidenced by the fact that less than two per 1,000 inhabitants started for other lands during 1904, while in the same year over seven Irishmen out of each 1,000 left their native island, and still more Italians quit their peninsula. Therefore, the following report from Consul Harmony, of Corunna, will prove of considerable interest to Americans:

In Spain the maritime provinces are the most abundant sources of emigration. Yet the seacoast population has increased, while that of the inland provinces, which contribute few emigrants, is much lower in comparison and remain stationary. In the year 1904 98,394 left Spain by sea, and 71,254 entered. These totals include the important movement between Spain and Africa, France and Gibraltar. The excess of emigration over immigration in Spain is from the most densely populated provinces, which continue to increase in population. As to the comparison of emigration from this country with emigration from other European nations, the statistics published by the Geographical and Statistical Institute of Spain give Ireland 7.37 emigrants per 1,000 inhabitants, and Spain 1.82 per 1,000.

No exact figures are obtainable as to the total of the important sums sent or brought into Spain by persons who emigrated to America, but it is averred that in the year 1904 one banking house in Corunna paid $2,200,000 through drafts from America, entirely apart from any commercial transaction. In the same year the bank of Rio de la Plata paid drafts for $8,000,000. Therefore, it is not too much to infer that in the year 1904 $16,000,000 were sent or brought into this country by Spaniards who emigrated to the new world.

Vice-Consul-General Westacott, of London, makes a report on the emigration from the United Kingdom for last year, as follows:

The total number of emigrants from Great Britain and Ireland for 1905 was 459,917, an increase of 6,040 over 1904. There was a decrease of 9,197 British and Irish, but an increase of 15,237 foreigners. The British and Irish emigration to British colonies shows that 82,457 people went to Canada in 1905, an increase of 17 per cent. over the previous year; 15,181 people to Australasia; 26,283 to British South Africa; 4,716 to India, and 4,458 to other colonies. The British and Irish emigration to the United States last year was 122,389, a decrease of 17 per cent., and 6,754 to other foreign countries. The emigration of foreigners in the United Kingdom was 43 per cent. of the total number, 459,917. Of these, 25,688 went to British North America and 10,588 to other British colonies; 154,325 went to the United States (an increase of 6 per cent. over the previous year), and 7,078 went to other foreign countries. Furthermore, 196,520 immigrants arrived in the United Kingdom during 1905 from continental countries, an increase of 1,543 over 1904. Over half of these aliens were in transit to other countries, 108,347 of them continuing their journey. This alien immigration from the continent has become a serious problem with Great Britain, resulting in the partial exclusion act (published in Daily Consular and Trade Reports on February 10). However, the flood tide was not quite so great in 1905 as the previous year, but 74,409 remained in the country, against 82,845 in 1904.

CHINESE CRICKET FIGHTS

The Chinese do not take to horse racing, but they have wildly exciting sports of their own on which to wager and lose their cash. There are the cricket fights at Hong Kong, for instance. Many thousands of people journey from Canton to Hong Kong to see this sport. The crickets themselves are valued by their owners at enormous prices, a victorious insect fetching sometimes hundreds of dollars.

THE LONDON FOG

Sir Oliver Lodge, an English scientist, has discovered a way to dissipate the gloom of a London fog. Incidentally he produces rain. This is accomplished by the production of continuous high-potential electrical discharges. The electric current is shot up into the fog through barbed wires. It is of tremendous intensity, about 250,000 volts. An attempt is to be made soon to dissipate by this method the occasional fogs which enshroud New York harbor. These fogs have been unusually dense and prolonged this winter. One lasted for several days, during which there was no traffic in or out of the port. Several ocean steamships were held up during the prevalence of the fog. One who witnessed Sir Oliver's experiment at Birmingham describes it thus: "Sir Oliver was to be seen absorbed in the contemplation of mysterious strands of barbed wire which vanished a few feet above in impenetrable vapors. From his laboratory came the vicious crackel of a powerful electric discharge, and great jagged sparks vibrated between the terminals of the apparatus. Then he pulled the terminals apart, and as the discharge was transferred to outside wires there proceeded from hundreds of invisible barbs overhead a fizzling noise like the sound of raindrops on a hot plate. Then a wonderful thing happened. Through the opaque fog bank the outlines of the tall university buildings were gradually developed with the slow certainty of a photographic plate. The fog became cloud, the cloud became merely mist, depositing itself in drops above the walls. Away up in the eaves, 80 feet above the ground, could be seen the insulators in which the barbed wires terminated."

MACHINE THAT PROPHESIES

A machine that prophesies is an engine in use by the coast survey at Washington, D. C., which can and does predict the time of high and low tide for a given locality, and makes these predictions for a year in advance. Its performance is not limited to a year, but that is the maximum of work it is usually called upon to do. It is compact and delicate to a degree not easy to appreciate. To make these tidal predictions, which are issued in the form of a fat book of tables every year by the survey, the machine is first set, then operated by hand. As may be surmised, the setting of the machine is the point at which accurate mechanism and the human brain join forces. There are nineteen factors to be determined in making tidal predictions. Each factor alters all the rest. Hence the machine is so constructed that an alteration of one factor has its effect on the others. How this is done is understood in a measure by noting that there is a setting of nineteen dials, with pointers. Each pointer is on a pulley mounted eccentrically on its shaft, and over this pulley passes a chain which goes from one to another. Obviously if the eccentricity of one pulley is altered it has its proportionate effect on all the rest. The engine was invented by Prof. William Ferrell, who presented it to the government without charge for his idea. It cost originally but $3,500 and does the work of forty expert computers.

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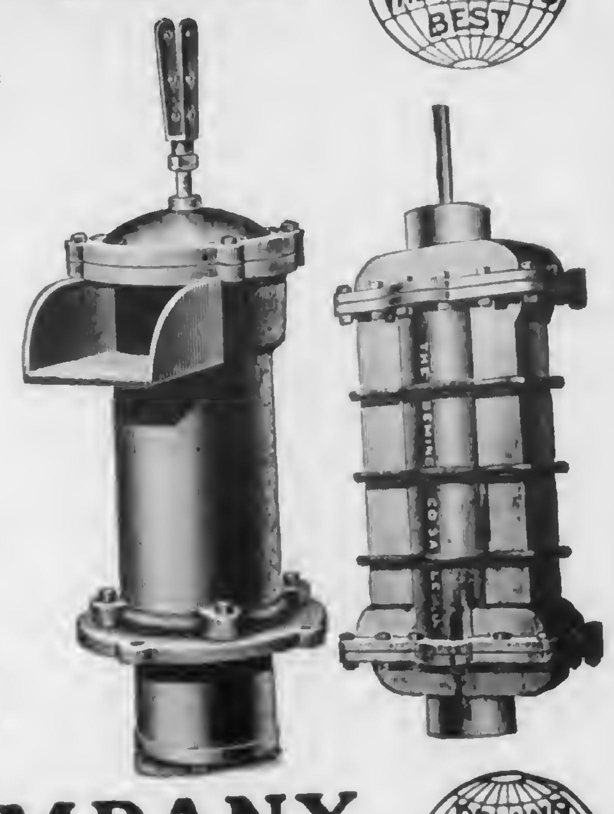

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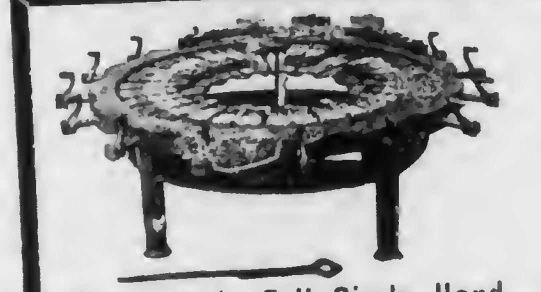

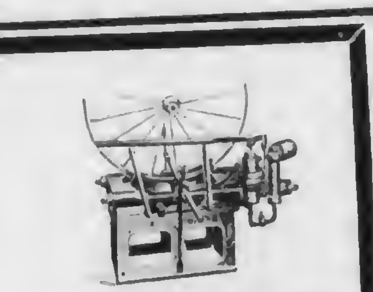

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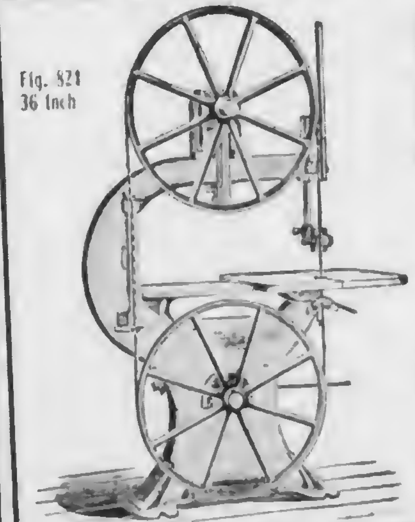

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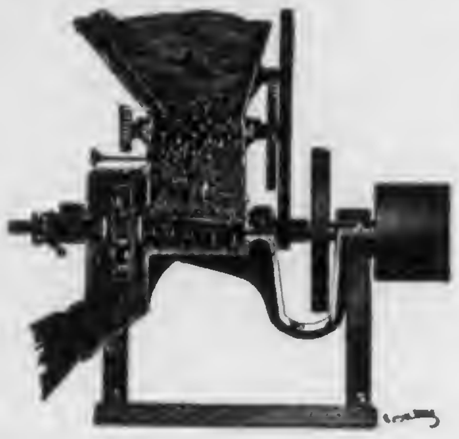

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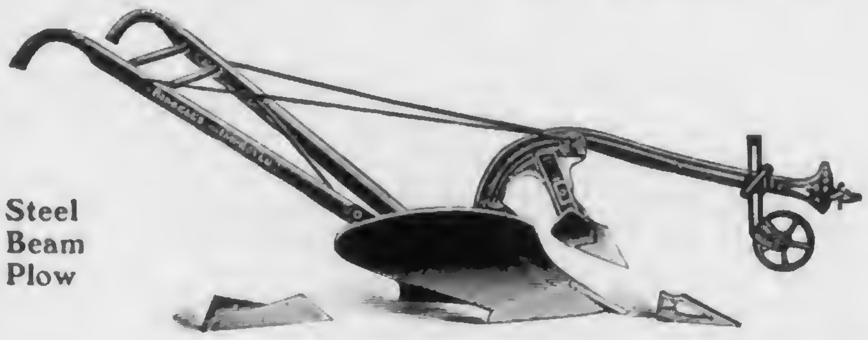

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